# WPP (

Test Specifications
Fuel Injection Pumps ①
and Governors

WPP 001/4 CAT 10,5 b

1. Edition

PES 6 P 80 A 720 LS 425 Komb.-Nr. 9 400 087 323

ROV 300-1000 PA 577-2

supersedes-

company: Caterpillar and angine: 3306 NA

91,9 kW

Festoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 1,95-2,05

Port closing at prestroke (1.90-2.10) mm (from BDC); cy1. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
990	12,0+0,1	9,7-9,8	0,25(0,4)			
300	6,8-7,0	0,9-1,6	0,2 (0,35			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

deflection	rev/min Control	100101	(e)	Intermediate Degree of deflection	rated sp	ced Control ( travel	rod	Lower rated Degree of deflection	speed	Control travel	rod	Sliding s	eleeve travel
of control lever	rod travel mm	rev/min (	2B)	of control lever	rev/min	mm	<b>(4)</b>	of control lever	rev/min	mm	3	rev/min	mm
1	2	3	_	4	5	6		7	8	9		10	11
max.	1010	15,2-17,8	3	-	-	-		ca. 16		min.1			0,5-2,0
ca. 69	4,0	1020-1030 1090-1120	0						490-	6,4- <del>6</del> -550=2		500 800	2,7-3,1 3,5-4,2 6,1-6,6
	1180	0-1,0	1					220-37	p			1010	8,5
								(3a)					

Torque control travel a = 0,70 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)  2 rev/min   cm³/1000 strokes		Rotational-speed (2b) limitation intermediate speed	(3)		Starting Idle switchin	ng point	Torque travel	-control 5  Control rod travel
1	2	3	4	5	6	7	8	9
990	97,0-98,0 (95,5-99,5)	1020-1030*	500 700	101,0-103,0 (100,0-104,0 103,0-105,0 (102,0-106,0		152,0-172,0	990 500 700 850	12,0+0, 12,7+0, 12,5+0, 12,2+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 CAT 7,0 a 1

1. Edition

PES 4 P 80 A 720 LS 440 Komb.-Nr. 9 400 087 327 ROV 350-950 PA 609-6

supersedes -

company: Caterpillar 3304-NA engine:

65,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,7+0,1	9,1-9,2	0,25(0,4)			
350	6,7-6,9	0,9-1,4	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	Sliding sleeve travet	
Degree of deflection	rev/min Control	Control rod (a)	Degree of deflection		Control rod travel	Degree of deflection of control		Control rod travel		0	
of control lever	rod travel mm	rev/min (28)	of control lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm	
1	2	3	4	5	6	7	8	9	10	11	
max.	1010	15,2-17,8	-	-	-	ca. 19	250	min.11,0		0,5-2,0	
ca. 66	10,7	980-990					350 540-	6,3-6,5 600=2,0	400 500	2,7-3,1 3,5-4,2	
	4,0 1150	1055-1085 0-1,0				300-400	ł	000-2,0	800 1010	6,1-6,6 8,5	
		× 65				<u>3a</u>					

O, ROmm Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2 rev/min cm³/1000 strokes		Rotational-speed (2b) limitation intermediate speed rav/min	(3)		idle switchir	• •	Torque- travel	Control cod travel
1	2	3	4	5	6	7	8	9
950	90,5-91,5 (88,5-93,5)	980-990*	500 700	95,5-97,5 (93,5-99,5) 100,0-102,0 (98,0-104,0)	100	152,0-172,0	950 500 700 800	11,7+0,1 12,5+0,1 12,4+0,2 12,0+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 CAT 7,0 a 240

1. Edition

PES 4 P 80 A 720 LS 440 Komb.-Nr. 9 400 087 328 ROV 350-1000 PA 613-2

company.Caterpillar 3304-NA 59.0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
1,95-2,05
Port closing at prestroke (1,90-2,10) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,6+0,1	9,0-9,1	0,25(0,4)			
350	6,7-6,9	0,9-1,3	0,2(0,35)			
			<u>.</u> 1			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	speed		Intermediate	rated sp	eed	Lower rated	speed		Stidina s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1000	15,2-17,8	-	-	-	ca. 21	250	min.11,0		0,5-2,0
ca. 70	10,6 4,0 1180	1030-1040 1100-1130 0-1,0				300-400	l	6,5-6,7 610=2,0	400 500 800 1010	2,7-3,1 3,5-4,2 6,1-6,6 8,5
						<b>3a</b> )				

Torque control travel a = (), 5

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		limitation intermediate speed	(30)		Starting Idle switchin	<u> </u>	Torque- travel	Control rod travel
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1000	90,0-91,0 (86,0-93,0)	1030-1040*	500 700	90,0-92,0 (87,5-94,5) 95,0-97,0 (92,5-99,5)	100	152,0-172,0	1000 500 700 850	11,6+0 12,1+0 12,0+0 11,7+0

Geschäftsbereich KM. Kundendienst. Kfz-Ausrüstung C by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany Imprime en Republique Fédérale d'Allemagne par Robert Bosch GmbH

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

WPP 001/4 CAT 7,0 a 3

1. Edition

PES 4 P 80 A 720 LS 440 Komb.-Nr. 9 400 087 313

ROV 375-1100 PA 732

supersedes \_

company: Caterpillar

engine: 3304-NA 73,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,05 mm (from BDC)

FOR CHOSING BY DIE	JU OKO	(1.90-2.10)	(			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,2-11,3	0,2(0,35)			
375	6,7-6,9	1,0-1,7	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated :	speed		Intermediate	rated sp	eed	Lower rated	speed	•	Sliding sleeve travel	
Degree of deflection	Control	Control rod ta	Degree of deflection		Centrol rod travel	Degree of deflection		Control rod travel		. ①
of control lever	rodtravel	mm rev/min (2a)	of control lever	rev/min		of control lever	rev/min	mm ③	rev/min	1
	2	3	4	5	6	17	8	9	10	11
max.	1130	15,2-17,8	-	-	-	ca. 19	250	min.10,0		0,7-1,6
ca. 68	12,1 4,0	1130-1140 1230-1260				350-450		5,9-6,1 540=2,0	525	2,6-3,1 3,7-4,3 5,0-5,5
	1350	0-1,0							1130	8,5
						<b>3a</b>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Controi-rod stop Test oil temp. 40°C (104°F) 2		limitation intermediate speed	high idle s	very characteristics 5e poeed 5b	Starting Idle switchin		Torque- travei	Control cod
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1100	112,0-113,0 (110,5-114,5)		700	107,5-110,5 (106,5-111,5)	100	152,0-172,0	1	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.85

BOSCH

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5 d

1. Edition

En

PES 6 P 80 A 720 LS 456 Komb.-Nr. 9 400 087 321

RQV 350-1000 PA 755

supersedes

company: Caterpillar

engine:

3306 T

Festcil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at pres	1,65-1,75 troke (1,60-1,80)	mm (from BDC)	;	cy1.	1;	RW	=	9,0-1	2,0	mm
			_		_					

Rotational rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-fensioning (torque-control valve) mm 6
1000	13,1+0,1	11,9-12,0	0,25(0,4)			
350	6,7-6,9	1,0-1,7	0,2 (0,35			

Adjust the fuel delivery from each outlet according to the values in [\_\_\_\_

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	,	Sliding	leeve travel
deflection of control	rev/min Control rod travel mm 2	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod tr. vel mm 3		0
max. ca. 70		15,2-17,8 1030-1040 1110-1140 0 - 1,0	2	-	-	ca. 17 300-400 ③	510-5	min.11,0 5,9-6,1 570 = 2,0	400 500	0,5-2,0 2,7-3,1 3,5-4,2 6,1-6,6 8,6

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil terr	alivery distop np. 40°C (104°F) 2	intermediate speed		Starting idle switchir	•	Torque- trevei	Control 5 Control rod	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 🍅	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	88	9
LDA 1000	0,45 bar 118,5-119,5 (118,0-120,0		LDA 800	0,45 bar 127,5-129,5 (125,5-131,5		152,0-172,0	600	13,1+0, 14,4+0, 13,9+0,
LDA 600	0,45 bar 131,0-133,0 (129,0-135,0)		600	0 bar 108,5-110,5 (106,5-112,5				

Checking values in brackets

• 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

CAT 10,5 d - 2 -

Testatn =

600

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm (1) .
PES 6 P LS 456 + RQV PA 755	0,45	0 0,27	14,4-14,5 13,0-13,1 13,8-13,9

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 SKO 13.7 a

1. Edition

PE 6 P 120 A 320 RS 482 Komb.-Nr. 0 401 846 504 RO 325/1000 PA 734

supersedes

Skoda M 2

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company: engine:

270.0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,2-2,3
Port closing at prestroke
(2,15-2,35)
mi

mm (from BDC)

RW = 9.0 - 12.0 mm

		2,15-2,35/			3,0 12,0	·····
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,1+0,1	24,6-24,8	0,5 (0,8)			
325	6,6-6,8	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin	g of slider	Full-load s	•	•	cifications (4)	idle spec	_		cifications (5)	Torque o		(3)
rev/min	Control rod travel	3.	Control rod travel mm	Control rad travel rnm	rev/min	•	Control rad travel	rev/min 9	Control rod	rev/min 11	Control rod travel	3)
700	15,6-16,4	700	16,0		1045-1060 1115-1145 0-1,0	325	6,6	325	min.8,1 6,5-6,7 25=2,0	700 790	13,8-13, 14,8-14, 14,5-14, 14,0-14,	,9 ,7

Torgue-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting l	ruel delivery ed Control
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes / mm 7
LDA 700	1,0 bar 246,0-248,0 (243,0-251,0)		LDA 1000	1,0 bar 240,0-244,0 (236,0-248,0)		

Checking values in brackets

# D. Adjustment Test for Manifold Pressure Compensator SKO 13,7 a

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 482 + RQPA 734	1,0	0 0,76 0,65	14,1-14,2 13,0-13,1 13,6-13,7 13,1-13,4

Notes

(1) when n

rev/min and gauge pressure =

bar ( - maximum full-load control rod travel)

WPP 001/4 VOL 7.1 a

1. Edition

PE 6 P 110 A 320 RS 483 Komb.-Nr. 0 401 846 505 ROV 250-1200 PA 499-1

supersedes companyolvo engine: TD 71 F 162,0 kW

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

POR CIOSING EXT	NOBUCKO	(2.95-3.15) min (non abo); Cy1. 1, NH = 3,0-12,0 nuii								
Rotational spe	ed Control rod travel	Fuel delivary	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)				
rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm 6				
700	12.7+0.1	13.7-13.9	0.4(0.75			2,4-2,6				

(tom 80c): CV1. 1: RW = 9.0-12.0 mm

rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes 3	mm 6
700	12,7+0,1	13,7-13,9	0,4(0,75			2,4-2,6 (2,2-2,9)
250	5,1-5,3	1,6-2,0	0,3(0,6)			
<u> </u>				<u> </u>		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

deflection	rev/min Control rod travel	Control rod travel mm rev/min	(a) (2a)	Intermediate Degree of deflection of control lever 4	rated sp rev/min 5	Control ro	•	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel mm 3	Sliding s rev/min 10	mm
max. ca. 62	1200 11,7 4,0 1500	15,2-1 1240-1 1380-1 0-1	250 410		•	-		ca. 9 300-410	250	min.6,6 5,1-5,3		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter	d stop mp. 40°C (104°F) 2	Rotational-speed (2b) limitation infermediate speed	Fuel delichigh idle s	rery characteristics (5a) apeed (5b) cm³/1000 strokes	idie switchir		Torque- travel	Control 5  Control rod travel
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 137,0-139,0 (134,0-142,0)		LDA 700	0 bar 71,0-73,0 (68,0-76,0)	100	160,0-190,0 160,0-190,0)	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator VOL 7,1 a

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm (1) .
PE 6 PRS 483 + RQVPA 499-1	0,9	0 0,60 0,11	12,7-12,8 8,9-9,0 12,2-12,3 9,2-9,4
	·		

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

**Testoil-ISO 4113** 

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 CAT 7,0 b 1

1. Edition

PES 4 P 80 A 720 LS 852 Komb.-Nr. 9 400 087 326

ROV 350-1000 PA 609-5

supersedes \_

company:

Caterpillar

engine:

3304 T 78.7 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1 60-1 80)

mm (from BDC) : cv1.1; RW = 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	10,7-10,8	0,25(0,35			
350	6,7-6,9	1,0-1,7	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	• 1	1		Intermediate	rated sp	1		Lower rated	speed	2		Sliding s	leeve travel
deflection	rev/min Control rod travel	Control rod travel	<b>(b)</b>	Degree of deflection of control		Control rod travel		Degree of deflection of control		Control re travel	_		ı O
lever		rev/min	<b>(28)</b>	lever .	rev/min	mm (	(1)		rev/min	mm	(3)	rev/min	
1	2	3		4	5	6		7	8	9		10	11
max.	1010	15,2-17	,8	-	-	-		ca.17		min.1			0,5-2,0
ca. 68		1030-10- 1110-11-						320-420	530-5	16,3-6 590= 2		500	2,7-3,1 3,5-4,2 6,1-6,6
<b>!</b>	4,0 1200							320-420				010	8,5
								<b>3</b> 9					

Torque control travel a = 1,0

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten	stop np. 40°C (104°F) (2)	Rotational-speed ②b fimitation intermediate speed	high idle s	very characteristics 5a speed 550 cm <sup>3</sup> /1000 strokes	Starting fuel delivery 6 Idle switching point rev/min cm³/1000 strokes		Torque travel	Control S  Control rod travel
1	2	3	4	5	6	7	8	9
1000	106,5-107,5 (105,0-109,0		500 700	109,0-112,0 (107,0-113,0 113,0-115,0 (111,0-117,0	)		500 700	12,2+0,1 13,2+0,1 13,1+0,2 12,7+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 SSC 14,0 a 1

1. Edition

PE 12 P 100 A 520/6 RS 3103-1

RQV 375-1000 PA 639-2

supersedes SSCM

Komb.-Nr. 0 401 830 711

company: V 12.520 AN 220,0 kW

1-8-5-10-3-7-6-11-2-9-4-12

0-15-60-75-120-135-180-195-240-255-300-315 ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 atrokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1000	11,5+0,1	9,2-9,4	0,35(0,6)			
375	7,6-7,8	1,0-1,4	0,35(0,55	)		

Adjust the fuel delivery from each outlet according to the values in F

#### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed	_	Cliding	Janua Annual
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm (28)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm
max.	1075	15,2-17,8	-	-	-	ca. 19		min.9,2 7,6-7,8	350 450	1,1-1,6 3,3-3,7
ca. 65		1040-1050 1120-1150 0-1,0				375-47				5,2-5,6 7,7
						<u>3a</u>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		limitation intermediate speed	Fuel deliv	very characteristics 5a	Starting Idle switching		Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travei mm
1	2	3	4	5	6	7	8	9
1000	92,0-94,0 (90,0-96,0)	1040-1050*	-	-	100	230,0-250,0 (226,0-254,0		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.85

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2. Edition

PE 12 P 120 A 520 RS 3128 Komb.-Nr. 0 401 840 721

ROV 400-750 PA 708

supersedes 5.85

company: SSCM

V 12.520 S 25

1- 8- 5-10- 3 - 7 - 6 - 11- 2 - 9 - 4 - 12 0-15-60-75-120-135-180-195-240-255-300-315  $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$  0,75°) engine:

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
700	14,3+0,	22,9-23,1	0,5(0,9)			
400	6,9-7,	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travei	Full-load Setting por rev/min 3	•	-	rev/min	Idle spec Setting p rev/min 7	Control rod travel		cifications 5 Control rod travel mm	rev/min	Control rod (3)
-	-	-	-	13,3 4,0 900	750-755 788- <b>8</b> 01 0-1,0	400	7,0	100 400	min.8,5 6,9-7,1	-	-

Torque-control travel on flyweight assembly dimension a =

750-755 min Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting to	fuel delivery ed Control
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-100′, strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
700	229,0-231,0 (226,0-234,0)		-	-	100	170,0-190,0 (166,0-194,0)

Checking values in brackets

rod travel

WPP 001/4 ROL 12.2 d

2. Edition

ROV 250-975 PA 709 PE 6 P 120 A 320 RS 3129 1-4-2-6-3-5 ie  $60^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

superseded 85 Rolls Royce company: Eagle III 204 kW

Komb.-Nr. 0 401 846 793 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Mark for end of pump delivery 7,5° before

A. Fuel injection Pump Settings
Port opening at prestroke 5,7-5,8

(5,65-5,85mm (from BDO)) RW=9,0-12,0 mm

end of pump delivery cyl.1.

		(3,03-5,85	7	VH-3,0-1	2,0 mm	
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery - cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) .nm 6
900	12,7+0,	20,6-20,8	0,5(0,9)			
250	5,6-5,8	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermedial	e rated sp	eed	Lower rated	speed		Slidings	leeve travel
deflection of control	rev/min Control rod travel	mm	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
fever 1	mm 2	rev/min (2 3	lever 4	rev/min 5	mm (4)	lever	rev/min 8	mm (3) 9	rev/min 10	mm 11
max.	1040	15,2-17,	8 -	-	-	ća. 16	1	min.7,1	250	1,1-1,2
ca. 66	11,7 4,0	1015-102 1105-113					250	5,6-5,8		2,1-2,6 3,2-3,5 8,3
	1250	0-1,0	•			355-415				
						<u>3</u>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-foad d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)			fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rGv/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
900	206,0-208,0 (203,0-211,0)		500	188,0-194,0 (185,0-197,0		200,0-220,0 (196,0-224,0		-

Checking values in brackets

\* 1 mm less control rod travel than col 2

05.85

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 r 1

1. Edition

En

PE 6 P 120 A 320 RS 3134 Komb.-Nr. 9 400 087 312

RQV 250-1100 PA 764

supersedes company:

Vo1vo

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine:

TM 101 G

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Şettings

Port closing at pres	stroke	$(2,55-\overline{2},75)$	mm (from BDC)	; cyl	.1; RW = 9,0	1-12,0 mm
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm³/100 strokes 3	mm 6
700	14,8+0,1	27,8-28,0	0,5(0,9)		· ·	
250	5,6-5,8	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated Degree of deflection of control lever	rev/min Control rod travel mm	Control rod (a travel mm rev/min 26	of control	rev/min	Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel	Sliding s	mm
max. ca. 49	1170 13,8 4,0 1375	15,2-17,8 1160-1170 1265-1295 0-1,0		-	-	ca. 9 ③	100 250 230-	min.4,0 2,1-2,3 290=2,0	250 500 800 1100	0,7-1,1 2,9-3,2 5,0-5,3 7,7

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel delic high idle s	very characteristics 5a	Starting Idle switchli		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes		cm <sup>3</sup> /1000 strokes	rev/min	travel mm 9
LDA 700	0,35 bar 278,0-280,0 (275,0-283,0		LDA 700	0 bar 259,0-261,0 (256,0-264,0)	100	240,0-260,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.85

**BOSCH** 

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A15

### D. Adjustment Test for Manifold Pressure Compensator VOL 10,0 r 1

- 2 -

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 3134 + RQVPA 764	0,35	0 0,21 0,16	14,8-14,9 14,0-14,1 14,5-14,7 14,2-14,3

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# **Test Specifications** Fuel Injection Pumps 2 and Governors

DS 11 25, 26

WPP 001/4 SCA 11,0 u 11

2. Edition

PE 6 P 120 A 720 RS 7001

RQ 200/1100 PA 713

supersedes 11.84 company: Scania

engine:

Komb.-Nr. 0 402 646 819

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
5,0-5,1
(4,95-5,15) m

mm (from BDC)

		(4,95-5,15)				
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7+0,1	16,1-16,3	0,6(0,9)			3,3 <sup>±</sup> 0,1
225	4,4-4,6	1,1-1,5	0,3(0,6)			(3,0-3,5)
						**

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

PRG che	Control rod travel	٠	Full-load s Setting po	• -	_	rev/min	Idle spec Setting p rev/min	Control rod travel		cifications Control rod travel	Torque o	Control rod (3)
1	2		3	4	5	6	7	8	9	10	11	12
800				16,5	10,7 4,0	1		4,5		min.5,9 4,4-4,6	-	-
VH =	max. 46	5°			1400	0 - 1,0				340=2,0		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: A 145-1160 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting I	ruel delivery
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
LDA 700	0,5 bar 161,0-163,0 (158,0-166,0)	<b>-</b>	LDA 1100 LDA 500	0,5 bar 163,0-171,0 (161,0-173,0) 0 bar 120,0-124,0 (118,0-126,0)	100	240,0-290,0 =20,0-21,0 mm RW

Checking values in brackets

### D. Adjustment Test for Manifold Pressure Compensator

SCA 11,0 u 11

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 P RS 7001 +RQ PA 713	0,50	0 0,28 0, 17	11,7-11,8 10,3-10,4 11,4-11,5 10,5-10,7

Notes

(1) when n =

rev/min and gauge pressure

bar (" maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- lest specifications approved by Scania on 17.5.1984
- Start of fuel delivery-engine: DS 11 25  $15^{\circ}$  before TDC DS 11 26  $11^{\circ}$
- firing sequence, engine : 1-5-3-6-2-4
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 mm.

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 w 2

2. Edition

PE 6 P 120 A 720 RS 7007 y RQV 200-1000 PA 539-2 supersedes 7.85 Komb.-Nr. 0 402 646 812 y values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015 supersedes 7.85 Scania DSC 1102 LKW 112

See page 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

4.5-4.6

Port closing difference between control-rod travel 8 mm and max. 1,85-2,55° camshaft

Port closing at pres	itroke (	4,45-4,65)	mm (from BDC)		= RW 6.0 - 8.	0
Rotational speed	travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	14	2	3	6
700	16,0+0,1	22,4 - 22,6	0,7 (1,0)			3,3 <u>+</u> 0,1
225	4,4-4,6	1,4 - 1,8	0,3 (0,6)			(3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_\_.

\*\* Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

B. Governor Settings

Upper rated s	peed	•		Intermediate rated speed				Lower	r rated	speed	•		Sliding sleeve travel	
deflection of control	Control rod travel	Control rod travel mm rev/min 3	(18) (28)	Degree of deflection of control lever	rev/min 5	Control rod travel mm ( 6	•	Degre defied of con lever 7	ction	rev/min 8	Control travel mm 9	rod 3	rev/min	mm 11
max.	1040	15,2-17	,8	-	-	-		ca.	10		min. 4,4-4			0,5-0,8 3,1-3,6
ca. 62		1040-105 1175-120 0-1,0	05							310-3		2,0		5,1-5,4 7,9
								(39)						

Torque control travel a = - m

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-rot Test oil ten rev/min		limitation intermediate speed	diale speed		idie switchii	• •	Torque- travel	Control 5 Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 224,0-226,0 (221,0-229,0)	1040-1050 *	LDA 1000 LDA 500	0,9 bar 220,0-228,0 (218,0-230,0 0 bar 164,0-168,0 (162,0-170,0	)	240,0-290,0 = 20,0-21,0 mm RW		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

SCA 11,0 w 2

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 7007 y +RQVPA 539-2	0,90	0 0,41 0,29	16,0 - 16,1 11,8 - 11,9 14,0 - 14,1 12,4 - 12,6

Notes

(1) when n =

rev/min and gauge pressure = bar ( - maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 18.8.1983
- Start of fuel delivery-engine:  $22^{\circ}$  before TDC at RW = 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MWM 14,4 b

1. Edition

ROV 300-1150 PA 756

supersedes company:

Komb.-Nr. 0 402 648 823 Values only apply to test nozzle-and-holder assembly

MWM engine:

1 688 901 019 and fuel-injection test tubing 1 680 750 067

TBD 234 V 8

11-8-5-4-7-2-3-6 10-30-90-120-180-210-270-300 ° ± 0.5 ° (± 0.75 °) All test specifications are valid for Bosch Fuel Injection Pump Test Beriches and Testers

#### A. Fuel Injection Pump Settings

PE 8 P 120 A 520/5 RS 7115

	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod trayel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1150	12,0+0,	19,1-19,3 (18,8-19,6)	0,5 (0,9)		,	]
300	5,9-6, <sup>-</sup>	2,2-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed	Sliding s	Sliding sleeve travel	
Degree of deflection of control	rev/min Control rod travel	travel (a)	of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever	шш	rev/min (2a)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
11	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 11		min.7,4	300	1,3-1,4
ca. 66	11.0	1190-1200					300	5,9-6,1	325 390	1,6-2,0 2,4-2,8
33		1275-1305				310-530				B,0-3,5
	1400					510-550			1190	8,5
						(3e)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed 2b timitation intermediate speed	Fuel deliv	rery characteristics 58 peed 50	idie	fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
is adj engine with t	ll-load delivusted on the in accordance engine tion sheet.	-			100	200,0-240,0 (196,0-244,0)	1	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2



# D. Adjustment Test for Manifold Pressure Compensator MWM 18, 1 6 - 2 -

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travet- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 PRS 7115 + RQVPA 756	0,7	0 0,10	12,0-12,1 10,0-10,1 10,1-10,3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

2

Festoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 RAB 9,7 a 3

PES 6 A 95 D 410 RS 2108 U Komb.-Nr. 0 400 846 247

RO 200/1100 AB 647 L

supersedes 11.84 Raba

engine

company:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(1.65-1.85)

mm (from BDC)

Rotational speed rev/min	Control rod travel .mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	10,7-10,9	0,35 (0,6			
200	6,1-6,3	0,9-1,5	0,35(0,55			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	g of slider ck (1)	Full-load	•	•	cifications (4)		ed regula point		cifications (5)	Torque (		3)
rev/min	Control rod travel mm 2	rev/min 3	Control rod travel rmm	Control rod travel rnrn 5	rev/min	rev/min 7	Control rod travel rmm	rev/min 9	Control rod travel	rev/min	Control rod ` travel	ی
600	15,4-16,4	600	15,9	10,0 4,0	1145-1160 1195-1225		6,0	200	min. 7,0 5.9-6,1 90 = 2,0	-	-	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 145-1160 min<sup>-1</sup>

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever pp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes·/ mm 7
1100	107.0-109.0 (105,0-111.0)	<del>-</del>	700 500	104, 0-107, 0 (101, 5-109, 5) 98, 0-101, 0 (95, 5-103, 5)	100 200	19,5-21,0 mm RW 6,2 mm RW

Checking values in brackets

7.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

4: 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1: Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 0MB 4,4 c 2

3. Edition

En

PES 4 A 90 D 410 RS 2195 Z Komb.-Nr. O 400 844 063 RQ 250/1200 AB 849 L

supersedes 1.84
company: OM-Brescia
engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pupp Settings

Port closing at prestroke

(2.10-2.30)

mm (from BDC)

	<u>,                                     </u>		<del></del>		<del> </del>	1
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1200	10,8+0,	1 6,8-6,9	0,3(0,45			
250	8,4-8,6	1,0-1,6	0,25(0,4	5 <b>)</b>		
				r		
	<b>!</b>			<u> </u>		<u> </u>

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	g of slider ck	<u>(1</u>	Full-load	•	_	cifications (4)	idle sper Setting p	•		cifications (5)	Torque (	
rev/min 1	Control ro travel mm 2	od C	rev/min	Control rod travel rnm 4	Control rod travel rn:m 5	rev/min 6	rev/min 7	Control rod travel rnm 8	rev/min 9	Control rod travel mm	rev/min	travel mm
650	15,6-	16,4	650	16,0	9,8 4,0	1245-1260 1325-1355		6,0	250	min.7,2 5,9-6,1 65=2,0	-	-

Torque-control travel on flyweight assembly dimension a =

mm

1245-1260 min Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	<b>3</b> b	Starting f Idle spee	Contrel
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm³/–1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
1200	68,0-69,0 (66,0-71,0)	-	800	58,0-62,0 (56,0-64,0)		100	16,3-17,0 mm RW

Checking values in brackets



# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 8,8 a

4. Edition

**Festoil-ISO 4113** 

PES 6 A 95 D 410 RS2416

PES 5 A 95 D 410 RS 2417

PES 4 A 95 D 410 RS2424

RQ.. 865D, 1054

•.A8C616D, ..A7C616D compar EP/RSV .. A8 B616D, A7 B616D engine

ROV 275-1325 AB799D

supersede 3.84

KHD Lizenz TAM F6 L413R (8,8)

F5 L413R (7,4)

F4 L413R (5,9)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

1 0.1 0.00. g a. p. co.	(1)	/0-1,90/				<del></del>
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mmi	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

RQ 275/1100 AB865D

1 2 3 4 5 6 7 8 9 10 11	Control rod travel
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	/min mm 12
600   15,7-16,3   600   16,0   1130   14,5-14,8   570   0   100   7,4-8,1   80   1200   6,2-11,5   350   2,4-4,6   1320   0   0   100	00   15,8-16,0 00   14,8-15,0

rorque control travel on flyweight assembly dimension a = 0,35 mm

Speed regulation At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	antrol lever	Control rod stop	Fuel deliv	ery characteristics	Starting t	uel delivery 
rest oil ten rev/min 1	np 40°C (104°F)   cm'/-1000 strokes   2	rev/min 3	rev/min	cm³/-1000 strokes 5	rev/min 6	cm³/1000strokes 7
ţ	age 5 - 6				100	114 - 124

Checking values in brackets

4.85

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung € 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

	_	•	·								
Checkin PRG che rev/min	Control rod	Full-load s Setting po rev/min 3		Test spec Control rod travel		Idle spec Setting p rev/min 7	Control   rod travel		cifications Control rod travel mm	rev/min	Control rod (3) travel mm
600	15,7-16,3	600	16,0	1223 1283 1309 1420	0 - 6,7		0	100 200 350 460	6,1-8,1 2,4-4,6	800 1000	15,8-16,0 14,8-15,0

Torque-control travel on flyweight assembly dimension a

0,35 <sub>mm</sub>

Speed regulation At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor o	lelivery on control lever np. 40°C (104 F)	Control rod slop 3a	Fuel deliv	ery characteristics 3b	Starting f	Control
rev/min 1	cm 1/- 1900 strokes 2	rev/min 3	rev/min	cm <sup>1</sup> /-1000 strokes 5	rev/min	rod travel cm <sup>3</sup> /1000 strokes / mm 7
	page 5 - 6					

Checking values in brackets

**B.** Governor Settings

RQ 275/1325 AB865D

Checkin PRG che	~	Full load	•	•		ldle sper			cifications (5)	Torque d	control (3)
	Control rod travel	rev/min	Control	Control rod travel rnm 5	rev/min		Control rod travel	rev/min 9	Control rod travel		Control rod travet mm
600	15,7-16,3	600	16,0	1340 1400 1470 1560	14,5-14,8 9,6-13,0 0 - 8,2 0		0	100 200 350 460	2 5-4 6	800 1000	15,8-16,0 14,8-15,0

on flyweight assembly dimension a = 0,35

Speed regulation At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	ノつにい	Starting f	uet delivery d 1 Cont
rev/min	cm <sup>1</sup> /-1000 strokes	rev/min 3	rev/min	cm³/-1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes / mn 7
	page 5 - 6						

63

B. Go	verno	or Setting:	S					KIID	0,0 a	
Upper rated Degree of deflection of control lever	speed rev/min	Control rod travel	Intermediat Degree of deflection of control lever	e rated sp	eed Control rod travel	Lower rate Degree of deflection of control lever	d speed	Control rod travel	Sliding : Torque- rev/min	sleeve travel control trave
1	2	3	4	5	6	7	8	9	10	11
RQ 90	0 AB 1	054		7			1		1	
ca. 26	850 900 950	16,0-19,0 9,0-12,5 0,8- 3,8	-		-	-	-	-	900	3,2
RQ 75	0 AB 1	054								
ca. 26	720 750 800	15,0-18,0 8,8-11,7 0 - 2,4	-	-	-	-	-	-	750 -	3,4
RQV 2	75 <b>-</b> 132	5 AB799D			torque-c	ontrol t	ravel	Мав а =	0,9 mm	·
ca. 68	1630		-	-	-	ca.12	200 400 600	6,4-8,2 2,8-4,6 1,5-3,0	1375 1325	8,3
ca. 66	1325 1410 1490 1600	15,0-17,5 7,4-13,0 0 - 8,0 0					750 850	0 -1,4	500	0,8-1,0
										,
		T	1	Ī		Γ	T		<sub>[</sub>	
							·			
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#### C: Settings for Fuel Injection Pump with Fitted Governor

engine po Full-load o Control-ro Test oil tei	lelivery	Rotational-speed limitation	Fuel deliv	very characteristics	ldle switchin	fuel delivery	intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	ı	cm <sup>3</sup> /1000 strokes		mm
05/4	2	125/170)	/ 26	5 En	6	7	8	
1. <u>85(1</u> 1325	15) - 105(413 80,5-82,5	1340	/ 20	<del></del>	5-80,5	100	119 -	- 129
			, 26					
2. <u>79(1</u> 1325	08) - 100(136 77,5-79,5	1340	/ 26		5-77,5		11	
3. 81(1	10) - 101(137	) - 121(169)	/ 25	00				
1250	80,5-82,5	1270		850 <b>7</b> 7	5-80,5		H	
4. <u>77(1</u>	05) - 97(132)	- 116(158)	/ 250	<u>0</u>				
1250	77,5-79,5	1270		850 74	,5-77,5		H ·	
5. <u>74(1</u>	00) - 92(125)	- 110(150)	/ 250	0				
1250	72,5-74,5	1270		850 <b>7</b> 1	5-74,5	······································		
	04 - 96(130)		2300	i				
1150	78,5-80,5	1170		850 77	5-80,5		II	
	00) - 92(125)		/ 230					
1150	74,5-76,5	1170		850 74	5-77,5			
	95) - 87(118)		/ 230	<del></del>			-	
1150	70,5-72,5	1170		850 71	5-74,5		11	
	90) - 83(113)		/ 230	<del></del>				
1150	66,5-68,5	1170		850 67 <sub>.</sub>	5-70,5	·		
	95) - 87(118)		/ 215					
1075	74,5-76,5	1090		850 74 <sub>.</sub>	5-77,5		11	
***************************************	90) - 82(112)		/ 2150	•			**	
1075	70,5-72,5	1090		850 71,	5-74,5			
2. <u>63(</u>	85) - 79(107)	- 95(129)	/ 2150					
1075	66,5-68,5	1090		850 67,	5-70,5		ti i	
3. 66(	90) - 82(112)	- 99(135) /	2000					
1000	73,5-75,5	1020		850 73,	5-76,5	· · · · · · · · · ·	41	
	84) - 78(106)		2000					
1000	70,5-72,5	1020		850 71,	5-74,5	· · · · · · · · · · · · · · · · · · ·	11	
	82) - 75(102)		2000					
1000	67,5-69,5	1020		850 68,	5-71,5		11	

Checking values in brackets

\* 1 mm less control rod travel than col 2

①

engine po Full-toad o Control-ro Test oil ter	lelivery	Rotational-speed limitation	Fuel dein	very characteristics	Starting Idle switchir	fuel delivery ng point	Intermed rotationa Torque-d travel	l speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	ww
6. <u>60(8</u>	32) - 76(103) 74,5-76,5	- 91(124) / 910	1800	-		100	119-1	29
7. <u>57(7</u>	78) - 72( 98) 70,5-72,5	- 87(118) / 910	1800	-	_		II	
8. <u>54(7</u>	67,5-69,5	- 83(113) / 910	<sup>1</sup> 1800	-			ч	
9. <u>50(6</u> 750	68) - 63( 85) 74,5-76,5	- 76(103) / 760	1500	•	•		13	
20. <u>48(6</u> 750	55) - 60( 82) 70,5-72,5	- 72( 98) / 760	1500	-	-		II.	
1. <u>46(6</u> 750	62) - 57( 78) 66,5-68,5	- 68( 93) / 760	1500	•	-		ti	
	- 5 6 L 413 R 0) - 83(113) 73,5-75,7	•	tput a 2300	speed			u	
3. <u>63(8</u> 1065	5) - 79(107) 74,5-76,5	-95(129) / 1075	2150				H	
4. <u>60(8</u> 990	1) - 75(102) · 73,5-75,7	- 90(122) / 1000	2000				11	
5. <u>54(7</u> 890	4) -69( 94) -8 74,5-76,5	900 g	800			62		•
6. <u>46(6</u> 740	2) - 57( 78) · 73,5-75,5	- 68( 93) / 750	1500				. 0	

F 4 - 5 - 6 L 413 R -Output at speed

28. <u>106</u> 1800

27. 90 / 1500

850 85,5-87,5

700 85,5-87,5

900-905

750-755

F 6 L 413 FR - A power output at speed

# **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 MWM 6,2a

7. Edition

PES 6 A 90 D 320/3 RS 2483

RSV 325-1200 A2 B 777DR Change of governor to RSV 400-1200 A2B 777 R

En

A2C 777 R

supersede 5.80 MWM

company TD 228-6 engine 110 %

Komb.-Nr. 0 400 865 072

estoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,15-2,25 Port closing at prestroke (2,10-2,30)

Difference between mm (from BDC) ; RW=7,5 mm CRT9 + 21 3.5-4.5°

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm · <b>2</b>	cm / 100 strokes 3	cm*/ 100 stro*-es 4	mm 2	cm/100 strokes	mm 6
1180	10,5-10,6	7,3 - 7,4	0,3 (0,45)			
400	6,4-6,6	0,6 - 1,2	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	er rated speed Control rod travel mm		Interme	ediate rat	ed speed	Control lever deflection in degrees 7	Lower	rated speed  Control rod  travel  mm  9	3 To	rque control Control rod travel mm
loose	800 x =	0,3-1,0 3,5		· · · · · · · · · · · · · · · · · · ·		ca. 17	325 100	6,5 min. 19 6,4-6,6	1180 750 500	10,5-10,6 11,5-11,7 11,7-11,8
ca.13	9,5 4,0 1450	1220-1230 1260-1290 0,3-1,7					400 610-67 725		300	11,7-11,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull load stop	Rotational speed limitat	11361	uel delivery naracteristics	Starting I	uel delivery 5	4a Irlie stop		
Test oil ti rev/min 1	emp 40°C (104°F) cm '/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>-/</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control root travel mm	
LDA 1180 LDA 750	0,7 bar 73,0 - 74,0 (71,0 - 76,0) 0,7 bar 79,0 - 82,0 (77,0 - 84,0)	1220-1230*	LDA 500 LDA 500	0,7 bar 72,0 - 74,0 (70,0 - 76,0) 0 bar 56,5 - 59,5 (54,5 - 61,5)	-	•	-	•	

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.85

Geschafisbereich KH. Kundendienst. Kfz. Ausrustung. c. 1980 by Robert Bosch. GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Fédérale d'Alfemagne par Robert Bosch. GmbH.

## D. Adjustment Test for Manifold Pressure Compensator 1991 6,0 4

Testatn =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 ARS 2483 1 RSVA2B 777R	0,70		11,7 - 11,8
A2C 777R		0,09	11,4 - 11,5
		0,06	11,0 - 11,2
		0	10,7 - 10,8

Notes

(1) when n =

rev/min and gauge pressure =

bar ( - maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 KHD 1 g 3 9. Edition

PES 4 A 85 D 410/3 RS 2638

RSV 325-1150 A0B 2168 L A0B 2168 L supersedes 5,84 KHD company

Komb.-Nr. 0 400 864 054

engine

BF 4 L 913 66 kW/2300 min-1

Symbol S 29

tractor DX92 (1) 60 kW/2300 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

tractor DX86 (2)

Symbol S 28

A. Fuel Injection Pump Settings

Port closing at prestroke

(2.45 - 2.65)

mm (from BDCRW=9,0-12,0 mm

BF 4 L 913 T

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1110	12,3+0,1	8,0-8,1	0,3(0,45)			
325	8,1-8,3	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	r rated speed		Interme	diate rated	rated speed  Lower rated speed    Control rod		•	Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	travel mm	rev/min	travel mm
loose	800 x =	0,3-0,7 1,0	-	=	-	ca. 31	325	7,7	1110 500	12,3-12,4 13,1-13,2
ca.55	11,3 4,0 1465	1155-1165 13,0-13,0 0,3- 1,7					325 700-760	8,1-8,3 = 2,0	940	12,7-12,9

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat Note: changed to)		net delivery paracteristics	Starting tildle	uel delivery 5	<b>4a</b> ) idi	da idle stop  Control rod travel		
rev/min 1	cm <sup>\$</sup> /1000 strokes 2	rev/min	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9		
(1) 1110	80,0-81,0 (78,0-83,0)	1155-1165*	700	79,5-81,5 (77,0-84,0)	100	100,0-110, (97,0-113, = 16,8 - 17,2 mm RW	0)	-		

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B. Governor Settings**

Degree of	deflection of control mm mm rev/min			ediate rated	speed	Control- lever deflection in degrees 7	- Lower	rated speed Control rod travel mm	11 0 1	rque control Control rod travel mm
loose		1220-1230	-	_	•	ca.26	325 100 325	7,0 min.19,0 7,4-7,6	1150 500 900	10,5+0,1 11,2+0,1 10,9+0,3
ca. 56	9.6 4.0 1475	1220-1230 1325-1355 0,3-1,7					720-780	<b>l</b> '	900	10,940,3

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational- speed limitat		lel delivery paracteristics	Starting f	ruel delivery 5			
Test oil te rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
(2) 1150	74,5-75,5 (72,5-77,5)	1220-1230*	800	65,5-68,5 (63,5-70,5)	100	108,5-118,	5 -	-	

Checking values in brackets

# Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travet mm	Interme	diate rated	speed 6	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	 rque control Control rod travel mm
29								

#### C. Settings for Fuel Injection Pump with Fitted Governor

	uli-load stop emp. 40°C (104°F)	Rotational- speed limitat.	Fuel delivery characteristics		Starting t	uel delivery 5	<b>49</b> Idi	e stop Control rod
rev/min	cm <sup>3</sup> /1 <b>000</b> strokes 2	changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
İ			Ì	·				

Checking values in brackets En

\* 1 mm less control rod travel than col. 2

#### 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,4 b 1

2. Edition

En

PES 6 A 95 D 410 LS 2639-1

RQ 250/1100 AB 1137-7 L

supersedes6 • 83 company MAN

Komb.-Nr. 0 400 846 524

engine D 2566 MUH/MUM 176 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	troke (	1,5 - 1,6 1,45-1,65)	mm (from BDC)	RW = 9	,0 - 12,0 mm	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference. cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,6+0,1	13,5 - 13,7	0,35(0,6	)		
250	7,5-7.7	0,9 - 1,5	v,35(0,55	)		
			^			
	<u> </u>					

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

	ecking of slider G check Sectors and Setting point			_	$\sim$				Torque control			
	Control rod travel	rev/min 3	Control	Control red travel mm	rev/min 6	rev/min 7	Control rod travel	ľ	Control rod travel	rev/min 11	Control rod travel	
600	15,6-16,4	600		12,6 4,0 1350	1145-1160 1270-1300 0 - 1,0		7,0	250 3 <b>9</b> 5-4	min. 6,9-7,1 35=2,0 max. 1,0	-	-	

Torque-control travel on flyweight assembly dimension

mm

1145-1160 min

1 mm less control rad travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics (3b)	Starting f	uel delivery d Control
rev/min 1	cm³/-1000 strokes	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes / mm 7
1100	135,0-137,0 (133,0-139,0)	49	500 700	121,5-125,5 (119,0-128,0) 121,0-124,0 (118,5-126,5)		95,0-105,0 92,0-108,0) = 14,4-14,6 mm RW

Checking values in brackets

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,0 g 4

7. Edition

<u>En</u>

Testoil-ISO 4113

PES 4 M 50 C 320 RS 103 RSF 375/2250 M 19 Komb.-Nr. 0 400 074 978

Sales model 0 400 074 977

company Daimler-Benz engine OM 615 44 kW (60 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A., Fuel Injection Pump Settings

Port closing at prestroke

170-180 (1,65-1,85)

mm (from BDC)

18,5-21,5<sup>Control rod travel</sup>

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)	
rev/min	mm	cm 1/100 strokes	cm <sup>1</sup> /100 strokes	mm	cm 1/100 strokes	mm	
1	2	3	4	2	3	6	
1000	12,2 <sup>+0,1</sup>	3,2-3,3	0,25(0,3)				
375 1800 2200	6,4-6,	0,65-0,75	0,1 (0,15) 0,25(0,3) 0,25(0,3)				
				<u> </u>			

Set uniform delivery according to the values in f

Checking values in brackets

#### **B.** Governor Settings

Lower rated speed			Upper rated speed				Variations in control rod travel		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Con		Retational speed		Rotational speed	Control rod travel
lever	mm	rey/min	lever	min		rev/min	I	rev min	mm
1	2	3	4	5		6	7	8	9
2	min. 12,0 max. 11,5 6,4-6.6 5,1-5,3 2,0 7	375	1	<u>용</u> 6	3-11, ,7-7, - -1,0	5 2200 1 2500 - 2950	(12) (13) (14) (6)	100 1800 1000 Switching p	min. 20,1 11,7-11,9 12,2-12,3

#### C. Settings for Fuel Injection Pump with Governor Mounted

elivery (19)							
np 40 C (104°F)			(8)			Difference	
cm <sup>2</sup> /1000 strokes	rev/min	rev/min	cn-1/1000 strokes	rev/min	cm <sup>1/1</sup> 000 strokes	cm 71000 strokes	
2	3	4	5	6	7	8	
33,0-35,0 (33,0-36,0)	2500* RW 6.7-7.1	1800	33,0-35,0 (32,0-36,0)	100	min. 53,0	6,0	
		1000	32,0-33,0 (31,0-35,0)	375	6,5-7,5 (5,5-9,0)	1,0 1,5 (15)	
				2500	13,0-17,0 (12,0-18,0)	2,5 See 3,0 Point 8 a	
	np 40 C (104 F) cm /1000 strakes 2	rev/min 2 3 33,0-35,0 2500*	rev/min 3 1800 1800 1800 1800 1800 1800 1800 18	1800   33,0-35,0   2500*   1800   33,0-35,0   (33,0-36,0)   1800   32,0-36,0   32,0-33,0	rev/min 2	np 40 C (104°F)   cm '/1000 strokes   rev/min     cm '/1000 strokes   rev/min     cm '/1000 strokes     cm '/1000 strokes	

Checking values in brackets

\*ca.3,5 less control rod travel than in Column 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuftgart 1. Printed in the Federal Republic of Germany Imprime en Republique Fédérale d'Allemagne par Robert Bosch GmbH.

0.00

**B12** 

- \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (5.0-5.4 mm). 1.
- Adjusting the idle control-lever position: 2. At  $1000 \text{ min}^{-1}$ , control-rod travel 1.4 - 1.5 mm.

4.

- Testing the idle-speed auxiliary spring shutoff 3. Control-lever position 47°. No change in control-rod travel after switching point up to 550 min-1. Control-lever position 30°. Rotational-speed range 350 min<sup>-1</sup>  $-450 \text{ min}^{-1}$ .
- Testing the pneumatic shutoff box Control lever against idle stop. At  $n = 375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,0 h

En

2. Edition

supersedes 10.81 company Daimler-Benz

engine

om 615 44 kW (60 PS)

0 400 074 975/..976 1 - 3 - 4 - 2 je 90°

RSF 375/2250 M 20

PES 4 M 50 C 320 RS 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85) mm (from BDC)

Control rud travel

18,5-21,5

			1	travel	i	(compensating valve)
rev/min m	m	cm1/100 strokes	cm <sup>4</sup> /100 strokes	mm	cm 1/100 strokes	mm
1 2		3	4	2	3	6
1000 1	1,4+0,1	2,95-3,05	0,25(0,3)			]
375 1900 2200	6,4-6,6	0,65-0,75	0,1 (0,15) 0,25(0,3) 0,25(0,3)			

Set uniform delivery according to the values in [ ] [

Checking values in brackets

#### **B.** Governor Settings

Lower rated s	peed		Upper rated sp	peed		Variations in co	ontrol rod trav	vel .
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/กแก	lever	mm	tGA/tiliti		revimin	mm
1	2	3	4	5	6	7	8	9
13-17 (2) (3) (4) (5)	2 0	375	50 (7)	0-1,0	1	(12) (13) (14) (6)	100 1900 2200 Switching p	min.20,1 10,9-11,1 10,7-10,9

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full load		Full load speed (8a) regulation	Variations delivery	in fuel 17	Starting f	uel delivery	,
Test oil te	mp 40 C (104 F)		İ	18		-	Difference .
revinin	cm1/1000 strokes	rev/min	revimin	cm 1/1000 strokes	rev/min	cm 1/1000 strokes	cm //1000 strokes
1	2	3	4	5	6	7	8
2200	31,5-33,5 (30,5-34,5)	2500*	1900	32,0-34,0 (31,0-35,0)	100	min. 55,0	6,0 (24)
			1000	29,5-30,5 (28,5-31,5)	375	6,5-7,5 (5,5-9,0)	1,0 (1,5) (5)
1			}		2500	17,0-21,0	2,5
						(16,0-22,0)	(3,0)See point 8a

Checking values in brackets

\*ca. 3,0 less control rod travel than in Column 2

12,85



BAY

- 1. \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (5.0-5.4 mm).
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1,4 1.5 mm.
- 3. Testing the idle-speed auxiliary spring shutoff
  Control-lever position 47°. No change in control-rod travel after switching point up to 550 min<sup>-1</sup>.
  Control-lever position 30°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- 4. Testing the pneumatic shutoff box

Control lever against idle stop. At  $n=375 \, \text{min}^{-1}$  and 450 mbar (vacuum) (338 mmłg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

WPP 001/4 MB 2,2 L

2. Edition

En

PES 4 M 55 C 320 RS 104 RSF 375/2300 M 4 Komb. Nr. 0 400 074 997

supersedes 1.85 company Daimler-Benz OM 615 49 kW

All test specifications are valid for Bosch Fuel Injection Pump 1est Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85) mm (from BDC)

Control rod travel

18,5-21,5

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (compensating valve)
mm	cm <sup>1</sup> /100 strokes	cm 1/100 strokes	mm	cm <sup>4</sup> /100 strokes	mm
2	3	4	2	3	6
13,0+0,1	3,7-3,8	0,25(0,3)			
6,1-6,3	0,65-0,75	0,1 (0,15 0,25(3,0) 0,25(3,0)			
	travel mm 2 13,0+0,1	mm cm '/100 strokes 2 3 13,0+0,1 3,7-3,8	travel mm cm'/100 strokes 2 cm'/100 strokes 4 0,25(0,3) 6,1-6,3 0,65-0,75 0,1 (0,15 0,25(3,0)	travel   cm'/100 strokes   cm'/100 strokes   mm   2   13,0+0,1   3,7-3,8   0,25(0,3)   6,1-6,3   0,65-0,75   0,1 (0,15)   0,25(3,0)	travel

Checking values in brackets

### **B.** Governor Settings

Lower rated si	peed		Upper rat	ed sp	eed			Variations in co	ontrol rod trav	rel
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	1	Control rod travel	Rota	tional speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever		mm	rev/r	TIII	İ	rev/min	mm
1	2	3	4		5	6		7	8	9
(2)	min.11,0 max.10,5 6,1-6,3 4,8-5,0	300 375	50	789	12,4-12 9,5	,6	2300 2570	(2) (3) (4)	100 1600 1000	min.20,1 12,7-12,9 13,0-13,1
(4) (5)	2,0	720-820		(e)(e)	0-1,0		2950	6	Switching pr	pint

## C. Settings for Fuel Injection Pump with Governor Mounted

Full load o	delivery (19)	Full-load speed (8a) regulation	Variations delivery	. ≍	"""	uel delivery	
· car on te	1			(18)			Difference
rev/min	cm 1/1000 strokes	rev/min	rev/min	cm 1/1000 strokes	rev/min	cm 1/1000 strokes	cm 1/1000 strokes
1	2	3	4	5	6	7	8
2300	38,5-40,5	2570 *	1600	38,0-40,0	100	min.53,0	6,0
	(37,5-41,5)	RW = 9,5	İ	(37,0-41,0)	375	6,5-7,5	1,0
			1000	37 0-38 0	ł	6,5-7,5 (6,0-8,0)	(1,5)
				37,0-38,0 (36,0-39,0)	2570	15 0 21 0	60 15
					2570	15,0-21,0 (14,0-22,0)	6,0 (3,0)
						(14,0-22,0)	(3,0)

Checking values in brackets

\*ca. 3,0 less control rod travel than in Column 2

12.85

**B**16

- 1. \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4.7-5.1 mm).
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.4 1.5 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 45°. No change in control-rod travel after switching point up to 550 min<sup>-1</sup>.
  Control-lever position 28°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- 4. Testing the pneumatic shutoff box

  Control lever against idle stop.

  At  $n=375 \, \text{min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

WPP 001/4 MB 2,2 K

2. Edition

Festoil-ISO 4113

PES 4 M 55 C 320 RS 104 RSF 375/2300 M 6 Komb.-Nr. 0 400 074 995 supersedes .85 company Daimler-Benz engine OM 615 49 kW Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85)

mm (from BDC)

Control rod travel

18,5-21,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve
rev/min	mm	cm <sup>1</sup> /100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,0 <sup>+0</sup> ,1	3,7-3,8	0,25(0,3)			
375 1600 2300	6,1-6,3	0,65-0,75	0,1(0,15) 0,25(0,3) 0,25(0,3)			
			0,25(0,3)			

Set uniform delivery according to the values in [

Checking values in brackets

#### **B. Governor Settings**

Lower rated sp	eed		Upper rated spo	eed		Variations in co	ntrol rod trave	el
Degree of deflection of control	Control rod travel			Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
11-15① ② ③ ④ ⑤	min.11, max.10, 6,1-6,3 4,8-5,0 - 2,0	5 300 375		12,4-12 9,5 0-1,0	,6 2300 2650 2900	(2) (3) (4) (6)	100 1600 1000 Switching po	min. 20,1 12,7-12,9 13,0-13,1

### C. Settings for Fue! Injection Pump with Governor Mounted

Full-load o	,	Full-load speed 8a regulation	Variations delivery		Starting for	uel delivery	I Difference
rest on ter	mp 40°C (104°F)			(8)			
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>2</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2300	38,5-40,5 (37,5-41,5)	2650* RW = 9,5	1600 1000	38,0-40,0 (37,0-41,0) 37,0-38,0 (36,0-39,0)		min. 53,0 6,5-7,5 (6,0-8,0) 15,0-21,0 14,0-22,0)	6,0 (23 1,0 (1,5) 2,5 (3,0)
							<b>6</b>

Checking values in brackets

\*ca. 3.0 less control rod travel than in Column 2

**B18** 

- 1. \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5,1 mm).
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.4 1.5 mm.
- 3. Testing the idle-speed auxiliary spring shutoff
  Control-lever position 45°. No change in control-rod travel after switching point up to 550 min<sup>-1</sup>.
  Control-lever position 28°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- Testing the pneumatic shutoff box
  Control lever against idle stop.
  At n = 375 min<sup>-1</sup> and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

40

WPP 001/4 MB 2,4 m 1

4. Edition

STORY CORPOR

PES 4 M 55 C 320 RS 107-1 RSF 375/2250 M 17 Komb.-Nr. U 400 074 956 Sales model 0 400 074 957

company Daimler-Benz
OM 616
engine 53 kW (72 PS)
Sweden version

1 - 3 - 4 - 2 0 - 90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30 (2,15-2,35)

mm (from BDC)

Control rod travel

18,5-21,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning teompensating valves
rev/min	mm	cm <sup>1</sup> /100 strakes	cm³/100 strokes	mm	cm²/100 strokes	mm
1	2	3	4	2	3	6
1000	13,4 <sup>+0</sup> ,	3,9-4,0	0,25(0,3)			
375 1800 2200	6,0-6,	2 0,6-0,7	0,1 (0,15 0,25(0,3) 0,25(0,3)			

Set uniform delivery according to the values in [\_\_\_\_\_]

Checking values in brackets

#### **B. Governor Settings**

Lower rated sp	eed		Upper rated sp	eed		Variations in co	entrol rod trav	el
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev.min	mm
1	2	3	4	5	6	7	8	9
9-13	min.11,0 max.10.5		50	12.5-12 8,2-8,6		12	100	min. 20,1
3	6,0-6,2 4,8 <b>-</b> 5,0	375	(8)	0-1,0	_	(13)	1800 1000	12,8-13,0 13,4-13,5
(4) (5)	2,0	- 720-820	(1)	-		6	Switching po	 pint

## C. Settings for Fuel Injection Pump with Governor Mounted

Full foad o	delivery (19)	Full load speed (8a)	Variations delivery	in fuel (17)	Starting f	uel delivery	•
Test oil tei	mp 40°C (104°F)		,	(18)		į	Difference
rev/min	cm <sup>1</sup> /1000 strokes	rev/min	rev/min	cm 1/1000 strokes	rev/min	cm 1/1000 strokes	cm 1/1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,2-8,6	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0
			1000		375	6,0-7,0	1,0
				(38,0-41,0)		(5,5-9,0)	1,5
					2500	23,0-27,0	2,5 See -
						(22,0-28,0)	3,0 Point
							8 a (16)
	<u> </u>						

Checking values in brackets

\*ca. 4.2 less control rod travel than in Column 2

**BOSCH** 

12.

- 1. \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5,1 mm).
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1,4 1.5 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 47°. No change in control-rod travel after switching point up to 550 min<sup>-1</sup>.
  Control-lever position 30°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- 4. Testing the pneumatic shutoff box
  Control lever against idle stop.
  At n = 375 min<sup>-1</sup> and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

estoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 L 2

1. Edition

PES 4 M 55 C 320 RS 107-1 RSF 375/1700 M 18-1 0 400 074 955 1 - 3 - 4 - 2 je 90°

company Daimler Benz

OM 616 45 kW-

Tunnelling or mining vehicles

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30 (2,15-2,35) mm (from BDC)

20-22

En

Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm <sup>4</sup> /100 strokes	mm
1	2	3	4	2	3	6
1650	11,9+0,1	3,55-3,65	0,25(0,3)			
375 1200 600	6,0-6,2	0,6-0,7	0,1(0,15) 0,25(0,3) 0,25(0,3)			

Set uniform delivery according to the values in F

Checking values in brackets

#### **B.** Governor Settings

Lower rated sp	eed		Upper rated sp	eed		Variations in co	ntrol rod trav	rel
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
(2)	min.11,0 max.10,5 6,0-6,2 4,8-5,0	300	50 7	h 4 h	1650 1900 2950	12) 13) 14)	100 1200 600	min. 20,1 12,1-12,3 12,8-13,0
5	2,0	720-820	$\widetilde{\omega}$			6	Switching p	oint

## C. Settings for Fuel Injection Pump with Governor Mounted

Full-load de	elivery (19) np. 40°C (104°F)	Full-load speed (8a) regulation	Variations delivery	in fuel (17)	Starting f	uel deliver <b>y</b>	Difference
rev/min	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4		rev/min 6	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes 8
1650	35,5-36,5 (34,5-37,5)	1900* 7,0-7,4 mm RW	1200 600	34,5-36,5 (33,5-37,5) 34,5-36,5 (33,5-37,5)	100 375 1900	min.53,0 6,0-7,0 (5,5-9,0) 16,0-20,0 (15,0-21,0)	6,0 1,0 (1,5) 2,5 (3,0) See Point 8 a (6)

Checking values in brackets

ca. 4,7 less control rod travel than in Column 2



- 1. \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5.1 mm).
- 2. Adjusting the idle control-lever position:

  At 700 min<sup>-1</sup>, control-rod travel 1.4 1.5 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 47°. No change in control-rod travel after switching point up to 550 min<sup>-1</sup>.
  Control-lever position 30°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- 4. Testing the pneumatic shutoff box

  Control lever against idle stop.

  At  $n = 375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

40

WPP 001/4 VOL 4,5 g

4. Edition

0 4113

PES 4 MW 100/320 RS 1102 0 403 474 001

Port closing at prestroke

RSV 300-1000 MW 1 A 315

supersed 10.84 Volvo company TD 45 engine 84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,80-2,90 (2,75-2,95)

mm (from BDC) bei RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm//100 strokes	mm
1	2	3	4	2	3	6
700*	11,9+0,1	10,9-11,1	0,35(0,6)			
300	5,6-5,7	1,3-1,7	0,35(0,55)			
1000	11,9+0,1		0,55(0,7)	2 3 4	-1 -5 42 5 12	7 mm with
*At the r	hinimum ful	1-load stop, s	et a contro	pi-rod trav	el of 12.6-12.	/ IIIII WICH
n = 1000	min/1. At	the maximum f	ull-load st	top, make t	he full-load a	ajustillent
accordi	g to test	specifications	<u> </u>	<u> </u>	<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Degree of deflection of control lever	Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees	Lower rev/min 8	rated speed Control rod travel mm	(3) To	rque control Control rod travel mm
Toose ca. 52	10,9 4,0 0,3-1,	0,3-1,0 1040-1050 1055-1085		J	<u> </u>	ca. 12	300 300 360-42	5,1-5,2 5,6-5,7 0 = 2,0		V

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Ft	ill-load stop	6 Rotational- speed limitat		iel delivery paracteristics	Starting (	uel delivery 5	4a) tdle stop	
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm /1000 strokes 7	rev/nn B	Control rod travel mm 9
700	109,0-111,0 107,0-113,0)	1040-1050*	1000	110,0-114,0 (107,5-116,5)	300	13,0-17,0 (10,5-19,5		5,6-5,

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.85

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

B24

3

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 3,0 o 1

3. Edition

SO 4113

PES 5 M 55 C 320 RS 108-1 RSF 350/2300 M 15

Komb.-Nr. 0 400 075 991

Sales model 0 400 075 989

company Daimler-Benz OM 617 (65 kW)

1 - 2 - 4 - 5 - 3 0 - 72-144-216-288

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30 (2,15-2,35)

mm (from BDC)

20 mm

Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning temperature valve	
rev/min	mm	cm <sup>7</sup> /100 strokes	cm <sup>1</sup> /100 strokes	mm	cm <sup>4</sup> /100 strokes	mm	i
1	2	3	4	2	3	6	
1000	13,4 <sup>+0,1</sup>	3,9-4,0	0,25(0,30)				į
350 1800 2200	6,0-6,2	0,6-0,7	0,1 (0,15) 0,25(0,3) 0,25(0,3)				
			0,23(0,3)				:

Set uniform delivery according to the values in [

Checking values in brackets

#### **B. Governor Settings**

Lower rated sp	peed		Upper rated s	peed		Variations in co	introl rod frav	/el
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Retational speed	_	Rotational speed	Control rod travel
lever	mm	rev/mm	lever	mm	revinin	i	jees min	mm
1	2	3	4	5	6	7	8	<u>o</u>
9-13 (1 (2) (3)	min.10,0 max. 9,5 6,0-6,2 4,6-4,8	300 350 450 **	50 7 8 9		2500 -	(1)	1800 1000	min. 20,1 13,0-13,2 13,4-13,5
(4)	2.0	20-820			2950	6	Switching p	oint

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	Full load speed (8a) regulation	Variations delivery	in fuel 17	Starting t	uel delivery		
Test oil te	mp 40°C (104°F)			18		1	Difference	
rev/min	cm 1/1000 strokes	rev/min	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm 1/1000 strokes	cm 71000 strol	kes
1	2	3	4	5	6	7	8	
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,6-9,0	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	(12.1
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0 1,5	(15)
					2500	23,0-27,0 (22,0-28,0)	2,5See Point	
	4 1 1 1						8 a	(16

Checking values in brackets

\*ca. 4.0 less control rod travel than in Column 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

- 1. \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,5-4,7).
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.4 1.5 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 47°. No change in control-rod travel after switching point up to 550 min<sup>-1</sup>.
  Control-lever position 30°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- 4. <u>Testing the pneumatic shutoff box</u>
  Control lever against idle stop.

At  $n = 375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

WPP 001/4 MB 2,0 n

2. Edition

En

PES 4 M 55 C 320 RS 152-3 RSF 375/2300 M 55-4 Komb.-Nr. 0 400 074 936 1-3-4-2 0-90-180-270

supersedes 3.85

company Daimler-Benz OM 601

53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 (1,95-2,15)

mm (from BDC)

Note: Before starting testing, observe the Control rod travel important instructions on the reverse.

RW = 20,0-22,0 mm

Rotational speed	Control rod travet	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm 1/100 strokes	cm 1/100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
375	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in [ ] 3

Checking values in brackets

#### **B.** Governor Settings

Lower rated s	speed		Upper rate	ed sp	eed			Variations in co	introl rod tra	/el
Degree of deflection	=	Rotational speed	Degree of	1	Control rod travel	Rotation	nal speed	•	Rotational speed	Control rod travel
of control lever	mm	rev/min	of control lever		min	rev/min			rev/mm	mm
1	2	3	4		5	6		7	8	9
13-17 (1		375	50	7	11,1-11 7,8-8,	7	1000 2500	(2) (3)	100 1800	min. 20,1 10,8-11,0
(3 (4	-</td <td></td> <td></td> <td>9</td> <td>0-1,</td> <td>q</td> <td>2900</td> <td>(14)</td> <td>2200</td> <td>10,3-10,5</td>			9	0-1,	q	2900	(14)	2200	10,3-10,5
(5	Z  1,0	630-730		0	I .			6	Switching n	oint

## C. Settings for Fuel Injection Pump with Governor Mounted

Full load o	delivery (19)	Full load speed 8a	Variations delivery	in fuel (17)	Starting for	uel delivery	
Test oil te	mp 40°C (104°F)			1 (18)			Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	revimin	cm <sup>4</sup> /1000 strokes	cm 1/1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500 * RW = 7,8-8,2	1800	34,0-35,5 (33,0-36,5)	100 375	min. 55 5,0-6,0 (4,5-9,0)	6,0 1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See (15) (3,0)Point
							8 a 16

Checking values in brackets

\*ca. 2.4

less control rod travel than in Column 2

- 1. \*\* Checking the idle speed auxiliary spring setting at n = 400 rpm, control rod travel (4.3-4.7 nm).
- 2. Setting the idle control lever position:

At 1000 rpm, control rod travel 0.9 - 1.0 mm.

3. Checking the idle speed auxiliary spring shut-off

Control lever position 50°, after change-over point (from starting curve) until 1000 rpm, max. permissible control rod travel 0.2 mm. Control lever position 48.5°; after change-over point (from starting curve) control rod travel must be greater than 0.2 mm.

4. Checking the pneumatic shut-off box

Control lever on idle stop. At n=375 rpm and pu=450 mbar, the control rod must travel rapidly to control rod position = 0 mm.

- 5. Overflow valve 1 469 990 351,
- 6. Port closing difference between largest/smallest value max. 1° camshaft angle.
- 7. Setting the idle speed control rod travel on the pneumatic idle boost box

When doing this, release the lock nut.

8. Checking the pneumatic idle boost:

With 0.4 bar vacuum, n = 425 rpm, control rod travel = (7.0 - 8.6 mm)Delivery =  $(11.0 - 19.0 \text{ cm}^3/1000 \text{ strokes})$ .

- 9. Apply 0.8 bar vacuum to the pneumatic idle boost box via a three-way valve and a pressure gauge. Using the three-way valve, disconnect the vacuum supply from the pneumatic idle boost box and pressure gauge. Permissible pressure drop 30 mbar in 15 sec.
- 10. Start-of-delivery sensor setting

Start-of-delivery sensor setting and locking according to average port closing value for all cylinders  $19.5 \pm 0.2 (0.3)^{\circ}$  camshaft angle after cylinder 1.

40

8.84

WPP 001/4 MWM 8,8 a

5. Edition

PE 6 A 100 C 320 RS 3008

EP/RSV 300-1150 A 1 B 489 DR A 1 C 489 DR

supersedes

PE 8 A 100..

RS 3009

EP/RSV 300-1150 A 1 B 489 DR A 1 C 489 DR company engine

MWM D/TD 232 - 6 D/TD 232 - 8

Instructions P. 3

ROV 300/550-750 AB 660 R. 871 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-180 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque control valve)
rev/min	mm (2)	cm1/100 strokes	cm <sup>-/</sup> 100 strokes	m:m	cm:/100 strokes	mm
1	2	3	4	2	3	6
1130	9,5-9,6	9,0-9,2	0,35(0,6)			
300	6,0-7,1	1,5-2,1	0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diale rated	1 speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm		rque control Control rod travel mm
loose	800	0,3-0,7	-	<u>-</u>	·-	ca. 25	300	5,5	See r	ote
	x =	4,0					300	5,9-6,1		
ca. 60	8,5 4,0 1400	1170-1180 1200-1230 0,3-1,4					485-545	= 2,0		

The numbers denote the sequence of the fests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Full load stop			speed limital Contracteristics			tuel delivery 5	49 "	le stop
	emp 40 C (104 F) cm·/1000 strokes 2	Note changed to ) rev/min	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm v 1000 strokes 7	rev/min 8	Control to travel mm
See	page 4-14	-	-	-	100	15,7-16,3 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.85

**BOSCH** 

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(1A)

**B.** Governor Settings

RQV .. 660R, 871R\*\*

Upper Degree of deflection of control lever	rated speed	Control rod travel	Intermediate Degree of deflection of control lever	rev/min 5	Control rod fravel mm	Degree of deflection of control tever	rev/min	Control rod travel mm	3 Too rev/min 10	que control Control rod travel mm
ca.66	750 770 790	14,8-17,8 9,0-14,0 3,5-10,5	ca.34	600 650	13,7-15,5 8,5-10,0 4,5-7,0		250 300 350	6,8-8,0 4,5-7,0 3,6-4,0		
(5)	800 840	0 - 8 0		720	0		550 630	1,8-4,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	oad slop	6 Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	5a) Idle stop	
Test oil tem rev/min t	p 40°C (104°F) cm*/1000 strokes 2	Note changed to rev/min 3	rev/min 4	cm '/1000 strokes 5	rev/min	cm <sup>4</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
See pag	e 4-14				100	15,7-16,3 mm RW		
			(6а)		300	5,3-5,7 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **B.** Governor Settings

1 Upper Degree of deltection of control lever	rated speed rev/min 2	intermediate Degree of deflection of control lever	Control rod travel mm	4 Lower Degree of deflection of control lever	rated spe rev/min 8	eed Control rod travel mm 9	1 ( ' )	que control Control rod travel mm
			***************************************					
5								

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ad stop p. 40°C (104°F)	6 Rotational speed limital Note	3a Fuel delivery characteristics		Starting fuel delivery Idle			Control rod
rev/min	cm 1/1000 strokes	changed to rev/min	rev/min 4	cm³/1000 strokes 5	rev/min 6	.cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

\*\* Governor ..871R = electromagnetic starting fuel delivery unlocking (24 volt)
Switch on magnet for max. 15 sec. when testing.

The nameplate described at  $\underline{MWM}$  1.5 a has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

- (2) Setting according to nameplate n = (speed 1) and Q = (delivery 1); or according to columns 1 and 2
- (3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5
- (6) Is adjusted according to nameplate n = (speed 1 + 20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

#### according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate.

Cam sequence and angular spacing:

PE 6 A:

PE 8 A:

engine po Full-load o Control-ro Test oil te	Jelivery	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchir	fuel delivery	Intermed rotations Torque- travel	l speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	ļ
F 165 F		<del></del>	720	00 5 05 5				
1250	81,0-83,0	1270	750	82,5-85,5				
B'162 F	PS / 2500 mi	in-1						
1250	81,0-83,0	1270	750	82,5-85,5				
B 162 F								
1250	81,0-83,0	1270						
F 160 F	PS / 2300 mi	in-1						
1150	80,0-82,0	1170	750	82,5-85,5				
B'155 F	PS / 2300 mi	i <u>n-1</u>						
1150	80,0-82,0	1170	750	82,5-85,5				
B 155 F	PS / 2300 mi	in-1						
1150	80,0-82,0	1170						
A 141 F	PS / 2300 mi	in-1	•				r v	
1185	76,0-78,0	1200						
B'144 F	PS / 2100 mi	in-1						
1050	77,0-79,0	1060	750	82,5-85,5				•
B 144 F	PS / 2100 mi	in-1						
1050	77,0-79,0	1060						
A 131 F	PS / 2100 mi	in-1			·	<u></u>		
1080	73,0-75,0	1090						
F 144 F	S / 2000 mi	in-1						
1000	77,0-79,0	1010	750	82,5-85,5				
B'138 F	PS / 2000 mi	<u>in-1</u>						
1000	77,0-79,0	1010		82,5-85,5				

engine po Full-load d Control-ro Test oil ten	lelivery	Rotational-speed limitation	Fuel deli	very characteristics	Idle	fuel delivery	Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
13	2	3	4	5	6	7	8	
3 138 P	PS / 2000 mi	n-1	•	•				
1000	77,0-79,0	1010						
126 P	S / 2000 mi	n-1						<del></del>
1030	73,0-75,0	1040						
3 127 P		<sub>n</sub> -1						
900	78,0-80,0	910						
\'115 P	S / 1800 mi	n-1						
900	78,0-80,0	910						
115 P	S / 1800 mi	n-1		•				
930	74,0-76,0	940						
108 P	S / 1500 mi	<sub>n</sub> -1						energy Linder of the control of the
750	80,0-82,0	760						
' 98 P	S / 1500 mi	n-1						
750	80,0-82,0	760						
98 P	S / 1500 mi	n-1						
775	76,0-78,0	785						
162 P	s / 2300 mi	<u>n-1</u>			· ·			
150 Special	83,0-85,0 output	1170						
143 PS	s / 1800 mi	<sub>n</sub> -1	· · · · · · · · · · · · · · · · · · ·					
900 mergend	89,0-91,0 cy power outp	910 ut						
	S / 1800 mi	n-1			· · · · · · · · · · · · · · · · · · ·			

En

900 89,0-91,0 Emergency power output

910

engine p Full-load Control-r Test oil to	delivery	Rotational-speed limitation	Fuel deliv	,	Starting Idle switchin		intermedi rotational Torque-c travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm

D 120 PS / 1500 min-1

750 90,0-92,0 760

Emergency power output

C 109 PS / 1500 min-1

750 90,0-92,0 760 Emergency power output

0

engine ( Full-load Control- Test oil t	delivery	Rotational-speed limitation	Fuel deli	very characteristics	Starting Idle switchin	fuel delivery	Intermed rotationa Torque- travel	speed
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	•	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 220	PS / 2500 m	<u>in-1</u>						
1250	81.0-83,0	1270	750	82,5-85,5				
B'216	PS / 2500 m	in-1						
1250	81,0-83,0	1270	750	82,5-85,5				
B 216	PS / 2500 m	<u> 11n-1</u>				: 1		
1250	81,0-83,0	1270 -						
F 213	PS / 2300 m	iin <sup>-1</sup>			-			
1150	80,0-82,0	1170	750	82,5-85,5	•			
B'206	PS / 2300 m	in-1						
1150	80,0-82,0	1170	750	82,5-85,5				
B 206	PS / 2300 m	<u> 11n-1</u>						
1150	80,0-82,0	1170						
A 188	PS / 2300 m	iin-1		· · · · · · · · · · · · · · · · · · ·				
1185	76,0-78,0	1200						
B'192	PS / 2100 m	nin-1						
1050	77,0-79,0	1060	750	82,5-85,5				
B 192	PS / 2100 m	nin-1	<u> </u>					
1050	77,0-79,0	1060						
A 175	PS / 2100 m	in-1		<del> </del>				
1080	73,0-75,0	1090						
F 192	PS / 2000 m	in-1	·					
1030	77.0-79,0	1040	750	82,5-85,5				
B' 184	PS / 2000 m	in-1			·			
1000	, 77,0-79,0	1010	750	82,5-85,5				

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational-speed limitation	peed Fuel delivery characteristics		Starting Idle switchir	fuel delivery ng point	intermediate rotational speed Torque-control travel	
rev/min cm <sup>3</sup> /1000 strok	rev/min	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm

B 184	PS /	/ 2000	min <sup>-1</sup>
1000	77,	0-79,0	1010

A 168	PS / 2000	min-1
1000	73,0-75,0	1010

A'154	PS	/	1800	min-1	
900	78	3.0	-80,0		910

A 154	PS /	1800	min-1	
900	74.0	76,0		910

B_14	14_	PS	/	1500	min-1	
77!	5	8	0.0-	-82,0		785

A'130	PS	/	1500	min <sup>-1</sup>	
750	80	3.0.	-82.0		760

A 1	30	PS	/	1500	min-1	
75	0	76	5.0-	-78,0		760

B 216 P	s /	2300	min-1	_
1150	83,0	-85,0		1170
Special	outp	ut		

D 190 PS / 1800 min <sup>-1</sup>	
900 89,0-91,0	910
Emergency power output	

C 173 PS	/ 1800 min-1	
900 8	9,0-91,0	910
Emergency	power output	

rev/min cm <sup>3</sup> /1000 strokes rev/min rev/min cm <sup>3</sup> /1000 strokes rev/min cm <sup>3</sup> /1000 strokes rev/min mm	engine po Full-load de Control-roe Test oil ten	elivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	fuel delivery	Intermed rotational Torque-c travel	speed
1. 12 13 14 15 16 17 18 1	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm

D 160 PS / 1500 min-1

750 90,0-92,0 Emergency power output

760

C 145 PS / 1500 min<sup>-1</sup>

90,0-92,0 750 Emergency power output

760

Checking values in brackets

\* 1 mm less control rod travel than col. 2

engine pe Full-load of Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel deliv	rery characteristics	Starting Idle switchir	fuel delivery ng point	Intermediate rotational speed Torque-control travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min mm
<u> </u>	2				-		<del>                                     </del>
F 210 1150	PS / 2300 m <sup>-</sup>	1170	800	104,5-107,5			
B'207	PS / 2300 m	in-1					
1150	105,0-107,0	1170	800	104,5-107,5			3
B 207	PS / 2300 m	in-1					
1150	105,0-107,0	1170					
A 188	PS / 2300 m	in-1					
1185	101,0-103,0	1200				·	
B'192	PS / 2100 m	in-1					
1050	103,0-105,0	1060	800	104,5-107,5			
B 192	PS / 2100 m	<sub>in</sub> -1					
1050	103,0-105,0	1060					
A 174	PS / 2100 m	in-1					
1080	99,0-101,0	1090					
F 192	PS / 2000 m	in-1					
1000	102,0-104,0	1010	800	104,5-107,5			
B'184	PS / 2000 m	in-1					
1000	102,0-104,0	1010	800	104,5-107,5			
B 184	P\$ / 2000 m	in-1					
1000	102,0-104,0	1010					
A 167	PS / 2000 m	in-1					
1030	98,0-100,0	1040	•	•			
B 168	PS / 1800 m	in-1					
900	101,0-103,0	910					

0

		Rotational-speed limitation	Fuel deli	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm	
1	2	3	4	5	6	7	8		
A'153	PS / 1800 m	in-1	•						
900	101,0-103,0	910							
	,								
A 153	PS / 1800 m	in-1							
930	97,0-99,0	940						•	
								·	
B 142	PS / 1500 m	<u>in-1</u>							
750	100,0-102,0	760	•						
···						·		<u></u>	
A'129	PS / 1500 m	<u>in-1</u>							
750	100,0-102,0	760	٠						
A 129	PS / 1500 m	<u>in-1</u>		•					
						the second of th		41	

Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	tion		Idle	fuel delivery ng point	intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	i -	rev/min	mm
1	2	3	4	5	6	7	8	
F 292	PS / 2500 mi	in_1						
1250	102,0-104,0	1270	800	100,5-103,5				
B1292	PS / 2500 mi	in-1						
1250	102,0-104,0	1270	800	100,5-103,5				
B 292								
1250	102,0-104,0	1270				· · · · · · · · · · · · · · · · · · ·		· ·
F 280	PS / 2300 mi	in-1						
1150	100,0-102,0	1170	800	100,5-103,5				
B'275	PS / 2300 mi	in-1						
1150	100,0-102,0	1170	800	100,5-103,5				
B 275	PS / 2300 mi	in-1				<del></del>		
1150	100,0-102,0	1170						
A 250	PS / 2300 mi	in-1						
1185	96,0-98,0	1200						
B'255	PS / 2100 mi	in-1						
1050	99,0-101,0	1060	800	100,5-103,5				
B 255	PS / 2100 mi	in-1						
1050	99,0-101,0	1060						
A 232	PS / 2100 mi	n-1						
1080	95,0-97,0	1060						
F 256	PS / 2000 mi	n-1						
1000	99,0-101.0	1010	800	100,5-103,5				
B'245	PS / 2000 mi	n-1						
1000	99,0-101,0	1010	800	100,5-103,5				

 $\odot$ 

## C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	,		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	ww
1	2	3	4	5	6	7	8	
0.245	DC / 2000 m	. 1	1		'	ı	•	•

B 245	PS		2000	min-1	
1000	99	,0-	101,0		1010

A 222	PS	_/_	2000	min-1	
1030	95	.0-	97.0		1040

B 224	PS	/	1800	min1	
900	99	,0-	101,0		910

A'203	PS	/	1800	min-1
900	99	.0-	101.0	

910

A 203	PS	/	1800	min-1
930	95	.0-	97.0	

9**∛**0

В	189	PS	/	1500	min-1

750 98,0-100,0 760

## A'172 PS / 1500 min-1

750 98,0-100,0 760

## A 172 PS / 1500 min-1

750 94,0-96,0 760

## D 250 PS / 1800 min-1

900 111,0-113,0 Emergency power output

910

## C 227 PS / 1800 min<sup>-1</sup>

900 111,0-113,0 Emergency power output 910

## D 210 PS / 1500 min-1

750 111,0-113,0

760

Testoil-ISO 4113

## C: Settings for Fuel Injection Pump with Fitted Governor

engine po Full-toad de Control-rod Test oil ten	elivery .	Rotational-speed limitation	Fuel deli		Starting Idle switchir	fuel delivery ng point	intermedi rotational Torque-c travel	speed
rev/min	cm <sup>S</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
[ ]	12	13	Ľ	1	<u> </u>			

C 191 PS / 1500 min<sup>-1</sup>
750 111,0-113,0 760

\* 1 mm less control rod travel than cot 2

40

WPP 001/4 DAF 11,6 i

6. Edition

En

PE 6 P 110 A 320 RS 372

RSV 250-1100 P 5/458 R

supersedes 5.84

Komb.-Nr. 0 401 876 235

company DAF

Note VDT-I-420/114!

engine DKTD 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(2,75-2,95)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	min (2)	cm <sup>1</sup> /100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm:/100 strokes	mm
1	2 .	3	4	2	3	6
850	12,0+0,1	13,7-14,0	0,4 (0,75)			
250	6,6-6,8	0,7-1,2	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

1 Uppe	Upper rated speed rev/min Intermediate rated				speed 4 Lower rated speed 3 forque of				rque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever dellection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,2	400	12,2-12,3
	x = 3,5						250 640-700	6,6-6,8 = 2,0	300	12,4-12,9
ca. 51	11,0 4,0 1425	1140-1150 1275-1305 0,3-1,7					040-700	= 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

9	emp 40°C (104°F)	Rotational- speed limitat	39 Fu	rel delivery aracteristics	Starting f	uel delivery 5	<b>4a</b> ) ldl	e stop Control rod
rev/min 1	cm <sup>1</sup> /1000 strokes 2	changed to ) rev/min 3	•c.⊬min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm/1000 strokes 7	rev/min 8	travel mm 9
LDA 850	0,7 bar 136,5-139,5 (134,0-142,0)	1140-1150 *	LDA 600	0 bar 127,5-130,5 (125,0-133,0)	100	245,0-285 (241,0-289 = 19,5 - 21,0 mm RW	0 250 ,0)	6,7

Checking values in brackets

8.85

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz. Ausrüstung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime ed Republique Federale d Allemagne par Robert Bosch GmbH.

<sup>\* 1</sup> mm less control rod travel than cot 2

## D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 i

. 2 -

Testatn -

600

rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure har	Gauge pressure bar	mm (1)
PE 6 P RS 372 + RSV P5/458 R	0,70	0 0,30 0,26	12,0-12,1 11,4-11,5 11,8-11,9 11,5-11,7

Notes

(1) when n

rev/min and gauge pressure =

bar ( - maximum full-load control rod travel)

40

WPP 001/4 DAF 11,6K1 4. Edition

estoil-ISO 4113

PE6P120A320RS372

RQ250/1100PA 417 R

supersedes 11.82 DAF

Komb.-Nr. 0 401 846 396

company DKS 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pymp Settings

Port closing at prestroke (2,75-2,95)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,9-11,	0 19,3 -19,7	0,5(0,9)			
250	6,2-6,4	1,1 - 1,5	65(0,95	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	g of slider ck Control rod	Full-load Setting po			cifications (4)	ldle spe Setting p	_		cifications 5	Torque d	Control rod
rev/min	travel mm 2	rev/min	rod travel mm 4	rod travel mm 5	rev/min 6	rev/min 7	rod travel mm 8	rev/min 9	travel mm 10	rev/min 11	travel mm 12
700	15,6-16,4	700	16,0	9,9 4,0 1350	1145-1160 1210-1240 O - 1,0		6,3	250	min.7,4 6,2-6,4 (85 ≈2,0		10,9-11,0 10,8-11,0

Torque-control travel on flyweight assembly dimension a =

mm

1145-1160 min

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	letivery on control lever pp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	ruel delivery d Control
rev/min 1	cm <sup>1</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	rod travel cm 1/1000 strokes:// mm 7
LDA 850	0,7 har 193,0 - 197,0 (190,0 -200,0)	•	1.DA 600	0 bar 133,5-137,5 (130,0-141,0)	100 250	320,0 - 360,0 = 19,5-21,0 mm RW 6,3 mm RW

Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k 1

Testatn -

600

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)
FE 6 P. RS 372 + RQ . FA 417 R	0,70	0 0,30 0,26	10, 9- 11,0 2,8- 9,9 10,6- 10,7 10,0- 10,2

Notes

(1) when n ::

rev/min and gauge pressure =

bar ( \* maximum full-load control rod travel)

estoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps (2) and Governors

WPP 001/4 DAF 11,6 k 5 2. Edition

PE6P120A 320 RS 372-1

Komb-Nr. 0 401 846 503

RQ 250/1000 PA 417-3

7.84 supersedes

engine

DAF DKSB

215 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

		2,75-2,95)				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,2+0,	17,9-18,1	0,5(0,9)			
250	6,6-6,8	1,4-2,0	0,8(1,2)			
					•	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che			( )	Torque control							
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel rnm 5	rev/min 6	rev/min 7	Control rod travel rnm 8	rev/min 9	Control rod travet mm 10	rev/min 11	Control rod travel mm
700	15,6-16,4	700	16,0		1035-1050 1095-1125 0-1,0	250	6,3	250	min.7,4 6,2-6,4 85=2,0	850 1000	11,4-11,5 11,3-11,5
	ontrol travel ght assembly dimen	ision a =	0	mm	Spe	ed regula		035-1	050 min -1		1 mm less contro rod trave

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Control rod travel cm <sup>3</sup> /1000 strokes:/mm 7
LDA 850	0,7 bar 179,0-181,0 (176,0-184,0)	-	LDA 600	0 bar 135,5-137,5 (132,5-140,5)	100	305,0-345,0 (301,0-349,0)
					250	6,2-6,4 mm RW

Checking values in brackets

8.85

## D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6k5

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure

Pump/governot	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure : bar	Gauge pressure - bar	mm (1)
PE6PRS 372-1 +RQPA 417-3	0,70	0 0,33 0, <b>30</b>	11,2-11,3 10,2-10,3 10,9-11,0 10,4-10,6

Notes

(1) when n =

rev/min and gauge pressure -

bar ( maximum full load control rod travel)

40

WPP 001/4 DAF 8,3 1 3

1. Edition

PE 6 P 100 A 720 RS 373

RSV 250-1200 P0/447 R

supersedescompany engine DAF DHU 825 169 kW

Komb.-Nr. 0 401 876 230

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,5 - 2,6 (2,45-2,65)

mm (from BD&) RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm 1100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm <sup>1</sup> /100 strakes	mm 6
1000	12,3+0,1	12,7-12,9	0,35(0,6)	2	3	
250	7,2-7,4	0,8-1,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Uppe Degree of deflection of control lever	rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	ハッノ	rque control Control rod travel mm
loose	800 x =	0,3-1,0 4,5	••	**	-	ca. 23	250 250	6,8 7,2-7,4	400 300	12,5-12,6 12,7-13,2
ca. 51	11,3 4,0 1500	1240-1250 1350-1380 0,3-1,7					560-62	0 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) FL	ull-load stop	6 Rotational- speed limitat	(3) f	uel delivery naracteristics	Starting fuel delivery 5 4a Idle stop					
Test oil to rev/min 1	emp 40°C (104°F) cm*/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm#1000 strokes 7	rev/min 8	Control rad travel mm 9		
LDA 1000	0,7 bar 127,0-129,0 (125,0-131,0)	1240-1250*	LDA 500	0 bar 89,5-92,5 (87,5-94,5)	100	195,0-215 (191,0-219		7,3		

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.85

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#### D. Adjustment Test for Manifold Pressure Compensator DAF 8,3 1 3

Test at n =

600

rev/min decreasing pressure ~ in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 373 + RSVP0/447 R	0,70	0 0,22 0,15	12,3-12,4 11,1-11,2 12,0-12,1 11,4-11,8

Notes

(1) when n =

rev/min and gauge pressure =

bar ( - maximum full-load control rod travel)

2

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MAN 11.1 q 30

1. Edition

En

PES 6 P 110 A 720 LS 375 Komb.-Nr. 0 402 046 315

RQ 250/1100 PA 752

supersedes companyMAN engine D 2566 MTUE

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) Cy1. 6; RW = 9,0-12,0 mm

1 2 3 4 2 3 6 1100 12,1+0,1 13,9-14,2 0,4(0,75)
250 7,4-7,6 1,0-1,5 0,45(0,75)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	Checkin	g of slider ck	Full-load sp Setting poir	_			Idle spee Setting p	•		cifications (5)	Torque c	control (3)
•	rev/min 1	Control rod travel mm 2	Įn	ed travel	Central red travel rnnn 5	rev/min	rev/min	Control rad travel rnm 8		Control rod travel		Control rod (travel)
	600	19,2-20,8	600 2	0,0	11,1	1145-1160	250	7,5	100 r	nin. 8,9	1100	12,1-12,2
	VH =	max. 46 °			4,0 1350	1190-1220 0 - 1,0			250	7,4-7,6	700	12,1-12,3
								4.4		·o -:1		

Torque-control travel on flyweight assembly dimension a =

mm

1145-1160 min

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting t	fuel delivery
rev/min 1	cm³/-1000 strokes	rev/min 3	rev/min	cm³/-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
LDA 1100	0,7 bar 139,0-142,0 (136,5-144,5)	-	LDA 500	0,2 bar 126,0-130,0 (123,0-133,0)	100	225,0-245,0 (221,0-249,0)
LDA 700	0,7 bar 132,0-138,0 (129,0-141,0)		LDA 500	0 bar 113,0-116,0 (110,5-118,5)	250	10,0-15,0 (7,5-17,5)
	132,0-138,0			113,0-116,0		

Checking values in brackets

9.85

#### D. Adjustment Test for Manifold Pressure Compensator MAN

MAN 11,1 q 30 - 2 -

Testatin =

500

rev/min decreasing pressure - in bar gauge pressure increasing

ump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 PLS375 + RQ PA 752	0,70	0 0,20	12,1-12,2 11,5-11,6 11,9-12,0

Notes

(1) when n

rev/min and gauge pressure =

bar ( \* maximum full load control rod travel)

WPP 001/4 SCA 9.0 d 1

1. Edition

PE 6 P 110 A 720 RS 3034 T Komb.-Nr. 0 401 846 709 T

ROV 200-1200 PA 275 R

supersedes

Scania company

DS 804 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke

mm (from BDC); Cyl. 1; RW = 9.0-12.0 mm

		(3,23-3,43)			, 5,6 12	3 4 116.1
Rotational speed rev/min	Control rod trevel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12,6+0,1	11,7-11,9	0,5(0,7)			2,4-2,6
225	5,9-6,1	1,5-1,9	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated :	speed	1		Intermediate	rated sp	eed		Lower rated speed				Stiding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min		Degree of deflection of control lever	rev/min	Control ro travel	d ①	Degree of deflection of control lever	rev/min	Control re travel	od (3)	rev/min	mm (1)	
<u> </u>	2	3		4	5	6		7	8	9		10	11	
max.	1200	15,2-17	<u>8, '</u>	-	-	-		ca. 9	100	min.7				
ca. 62	11,6 4,0 1500	1240-12 1380-14 0-1,	10					<b>③</b>	225 410-4	5,9-6 70=2,0				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-foad of Control-ro Test oil te		Rotational-speed 2b limitation intermediate speed			Starting Idle switchis	• •	Torque- travel	control (5) Control roc
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 600	0,9 bar 117,0-119,0 (115,0-121,0)	1240-1250*	LDA 1200	0,9 bar 123,5-128,5 (122,0-130,0		190,0-240,0	-	•
			LDA 500	0 bar 81,0-85,0 (79,0-97,0)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

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## D. Adjustment Test for Manifold Pressure Compensator SCA 8,0 d 1

rev/min decreasing pressure - in bar gauge pressure 500 Testato a diminution Measurement Setting Pump/governor Control rod traveldifference bar mm (1) Gauge pressure = Gauge pressure -12,6-12,7 0,9 PE 6 P. RS 3034 T 11,0-11,1 + RQV..PA 275 R 0,37 12,0-12,1 11,3-11,5 0,26

Notes (1) when n

rev/min and gauge pressure

bar ( maximum full load control rod travel)

- 2 -

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 15° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 r 9

1. Edition

<u>fin</u>

PE 6 P 110 A 720 RS 3040 T Komb.-Nr. 0 401 846 710 T

RQV 250-1050 PA 379 R

supersedes

company: Scania engine DS 1111

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (3.25-3.45) mm (from BDC); Cy1. 1; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	13,4+0,1	17,0-17,2	0,6(0,8)		·	3,2-3,4 (3,0-3,5)
225	4,4-4,6	1,7-2,1	0,2(0,4)			(3,0-3,3)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated a	peed rev/min	Control rod	Intermediate Degree of	rated sp	eed Control rod	Lower rated Degree of	speed	Control rod	Sliding s	leeve travel
deflection of control	Control rod travel mm 2	travel	deffection of control lever	rev/min 5	travel	deflection of control lever 7	rev/min 8	travěl mm 3	rev/min	mm 11
max.	1100	15,2-17,8	-	-	•	ca. 10		min.5,9		
ca. 62	12,4 4,0 1400	1090-1100 1235-1265 0-1,0					225 310-3	4,4-4,6   70=2,0		
						39				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delin	rery characteristics (5e)	Starting Idle switchir	•	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	travel mm
LDA 600	0,9 bar 170,0-172,0 (168,0-174,0		LDA 1050	0,9 bar 164,5-169,5 (162,0-172,0		240,0-290,0	<u>-</u>	-
			LDA 500	0 bar 128,0-132,0 (126,0-134,0				

Checking values in brackets

\* 1 mm less control rad travel than col 2

10.85

BOSCH

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#### D. Adjustment Test for Manifold Pressure Compensator SCA 11,0 r 9

Testatn =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure bar	Gauge pressure = bar	mm (1)
PE 6 PRS 3040 T + RQVPA 379 R	0,9	0 0,37 0,25	13,4-13,5 11,7-11,8 12,7-12,8 11,8-12,0

Notes
(1) when n

rev/min and gauge pressure =

bar ( - maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-1-400/117
- Test specifications approved by Scania on 11.2.1985
- Start of fuel delivery-engine: 20° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 FOR 6,6 c

1. Edition

PES 6 P 110 A 720 RS 3149 Komb.-Nr. 9 400 087 334

RQV 350-1300 PA 772

supersedes company: Ford

Values only apply to test nozzle-and-holder assembly engine: 1 688 901 017 and fuel-injection test tubing 1 680 750 008

66 TC 121,3 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	(4.20-4.40) Fuel delivery	Difference	Control rod travel	RW = 9,0-12,0 Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1300	13,4+0,1	10,8-11,0	0,5(0,9)			
350	7,2-7,4	1,6-2,0	0,35(0,55			
						]

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated: Degree of deflection of control lever 1	rev/min Control rod travel	Control rod (1) travel mm rev/min (2)	Intermediat Degree of deflection of control lever	rev/min	ced Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travet mm 3	Sliding s rev/min 10	mm
max. ca. 65	1300 12,4 4,0 1650	1360-137 1500-153	0	-	<b>-</b>	ca. 13 370-440 3		min.9,0 7,2-7,4 60=2,0	350 500 800 1000 1300	0,6-1,3 2,3-2,7 4,0-4,3 5,0-5,3 7,3

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	rery characteristics 5a peed 5b	Starting Idle switching		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	.9
LDA 1300	1,0bar 108,0-110,0 (105,0-113,0)	1360-1370*	LDA 600	1,0 bar 106,5-110,5 (104,5-112,5	100	100,0-120,0 (96,0-124,0)		
			LDA 500	0 bar 79,5-81,5 (76,5-84,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.85

**D**9

## D. Adjustment Test for Manifold Pressure Compensator

FOR 6,6 c

Test at n

500

rev/min decreasing pressure - in bar gauge pressure

300	_		
Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
PES 6 PRS 3149 + RQVPA 772	1,0	0 0,45 0,70	13,4-13,5 11,9-12,0 12,2-12,3 13,0-13,2
L			

Notes

(1) when n =

rev/min and gauge pressure =

bar ( maximum full load control rod travel)

Testoil-ISO 4113

WPP 001/4 MAN 20,9 u

1. Edition

PE 12 P 120 A 520/4 LS 3828

RQ 1200 PA 660-1

supersedes -

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

company MAN D 2842 LE

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°) engine

559 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 840 728

MAN-Nr. 2-7686

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) Zv1. 12

	179	13-4,337				
Rotational speed	Control rod travel mm 2	Fuel delivery  cm³/100 strokes	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
4450	<u> </u>	00 0 00 0	10.5(0.0)	2	3	
1150	11,9+0,1	20,0-20,2	0,5(0,9)			
250	6,9-7,1	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checking PRG che	g of slider ck	<b>①</b>	Full-load s	•	•	cifications (4)	Idle spec	_		cifications (5)	Torque o	control
rev/min 1	Control rod travel mm 2	·	rev/min 3	Control red travel rrarra 4	Central red travel rrsm	rev/min 6	rev/min 7	Control rad travel	rev/min 9	Control rod	rev/min 11	Control rod Travel
•	-		•	-		1195-1210 1285-1315 0-1,0	: <u>-</u>	•	-	•	-	-
								0				

Torque-control travel

Speed regulation: At 1245-1250 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting tidle spec	Juel delivery ed Control
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	rod travel cm <sup>3</sup> /1000 strokes / mm 7
1150	200,0-202,0 (197,0-205,0)	•	-	<u>-</u>	-	-

Checking values in brackets

9.85

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Testoil-ISO 4113

### **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 20.9 s

1. Edition

RQ 250/1150 PA 739 PE 12 P 120 A 520/4 LS 3828 1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12 0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 MAN-Nr. 2-7593

supersedescompany. MAN D 2842 LE

Komb.-Nr. 0 401 840 724

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)Zv1. 12 (4.15-4.35)

	(4,13-4,33)		.,		
Control rod travel mm 2	·	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
11,4+0,1	19,5-19,7	0,5 (0,9)			
6,9-7,1	1,7-2,3	0,8 (1,2)			
	travel mm 2 11,4+0,1	Control rod travel . Fuel delivery cm³/100 strokes 3 11,4+0,1 19,5-19,7	Control rod travel  mm cm³/100 strokes 2  11,4+0,1  19,5-19,7  Difference cm³/100 strokes 4  0,5 (0,9)	Control rod travel  mm cm³/100 strokes 3  11,4+0,1  19,5-19,7  Difference cm³/100 strokes 4  Difference cm³/100 strokes 4  0,5 (0,9)	Control rod travel  mm cm³/100 strokes 3  Difference cm³/100 strokes 2  11,4+0,1  19,5-19,7  Difference cm³/100 strokes mm cm³/100 strokes 3

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	ng of slider eck	Full-load : Setting po	•	~	cifications (4)	Idle spe	-		cifications (5)	Torque (		3)
rev/min	Control rod travel mm 2	rev/min 3	Control rod travel rnm 4	Control red travel mm 5	rev/min 6	rev/min 7	Control rod travel rmm	rev/min 9	Control rod travel	rev/min 11	Control rod Travel	ی
550 VH =	19,2-20,8 max. 46°	550	20,0	10,4 4,0	1220-1235 1415-1445	250	7,0	250	min.8,5 6,9-7,1 355=2,0		11,4-11, 11,4-11,	

Torque-control travel on flyweight assembly dimension a =

Speed regulation. At 1220-1235 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics		Starting fuel delivery 6		
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min	rod travel		
LDA 1150	1,0 bar 195,0-197,0 (192,0-200,0)	-	LDA 750 LDA 500	1,0 bar 200,0-206,0 (197,0-209,0) 0 bar 119,0-121,0 (116,0-124,0)	100 250	190,0-210,0 (186,0-214,0) 17,0-23,0 (14,0-26,0)		

Checking values in brackets

9.85

Test at n

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
PE 12 PLS 3828 + RQPA 739	1,0	0 0,30 0,52	11,4-11,5 8,9-9,0 9,2-9,3 10,7-11,0

Notes

(1) when n

rev/min and gauge pressure =

bar ( maximum full-load control rod travel)

**②** 

Testoil-ISO 4113

## Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 SCA 11,0 v 4

2. Edition

PE 6 P 120 A 720 RS 7004

RQ 750 PA 528-1

supersedes

company:

9.84 SAAB-SCANIA

DN 11

1 688 901 019 and fuel-injection test tubing 1 680 750 015

Komb.-Nr. 0 402 646 815

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

Values only apply to test nozzle-and-holder assembly

mm (from BDC).

		(4,95-5,15)				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,6+0,1	15,5-15,7	0,6(0,9)			3,3 <sup>±</sup> 0,1 ** (3,0-3,5)
** Due t new d	o smooth elivery-	ng of the seali alve holder mus	ng edge, t be adju	the sprin sted 70 2	g tension with ,9 - 3,1 mm.	a

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	g of slider eck	$\bigcirc$	Full-load s	-	~	cifications (4)	Idle spec	-		cifications (5)	Torque d	control (3)
rev/min	Control rod travel mm	•		Control rad traval rnm	Centrel red travel mm 5	rev/min	rev/min 7	Control red travel mm	rev/min 9	Control rod	rev/min	Control rod travel
-	-		ė	•	9,6 4,0 850	750-755 773-786 0-1,0	-	J	-	-	-	-

Torque-control travel on flyweight assembly dimension a =

Speed regulation: Z50-755 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever pp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	uel delivery d Contrat
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes/ mm 7
700	155,0-157,0 (152,0-160,0)	•	Zul.	- idle speed: Streuung: 4,0 (7,0)	100	240-290 = 20,0-21,0 mm RW

Checking values in brackets

8.85

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 19.9.1984
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

**Festoil-ISO 4113** 

## Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 SCA 11,0 v 3

2. Edition

PE 6 P 120 A 720 RS 7004

RQ 900 PA 528-2

supersedes 9.84

company Saab-Scania

engine. DN 11

Values only apply to test nozzle-and-holder assembly Komb.-Nr. 0 402 646 814 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 5,0-5,1 (4.95-5,15) mm (from BDC)

		4.95-5.151				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,6+0,1	16,2 - 16,4	0,6(0,9)			3,3 <sup>±</sup> 0,1 (3,0-3,5) **
** Due to	smoothi	g of the sealin	g edge, t	e spring	tension with	a

ivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checking PRG check		$\sim$	Full-load s Setting po	•	_	cifications (4)	Idle spec			cifications (5)	Torque o	control 3
	Control rod ravel mm 2		rev/min 3	red travel	Central rad travel mm 5	rev/min		Control red travel	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel
-	-		•	•	9,6 4,0 1000	900-905 934-948 0-1,0	-	•	-	-	-	<del>-</del>

Torque-control travel on flyweight assembly dimension a =

mm

900-905 min Speed regulation At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics (3b)	Starting fuel delivery Idle speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes / mm 7	
850	162,0-164,0 (159,0-167,0)	-	-	-	100	240,0-290,0 = 20,0-21,0 mm RW	
		-	High i	dle speed:			
			dis	persion 4,0 (7,0			

Checking values in brackets

8.85

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#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 19.9.1984
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Testoil-ISO 4113

Daimler-Benz

OM 442 LA

WPP 001/4 MB 14,7 a

1. Edition

PE 8 P 120 A 320 LS 7801

RO 300/900 PA 762-2

company engine

supersedes

Komb.-Nr. 0 402 648 819

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

		<u>5, 15-5,35)</u>				
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	13,0+0,1	19,2-19,5	0,5 (0,9)			
300	5,9-6,1	1,2 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	g of slider	Full-load : Setting po	•	-	cifications (4)	idle spec	-		cifications (5)	Torque (	control (3)
rev/min 1	Control rod travel mm	rev/min 3	Control red travel rmm 4	Control red travel rnm 5	rev/min	rev/min 7	Control red travel rrim 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel
600	19,2-20,8	600	20,0	12,1 4,0 1150	940-955 1020-1050 0-1,5		5,9	300	min. 7,6 5,9-6,1 405= 2,0	600	12,7-12,9 14,1-14,2 13,1-13,3
Torque-c	ontrol travel		1.2				9/	0-955	min=1		1 mm less contro

on flyweight assembly dimension a = C. Settings for Fuel Injection Pump with Fitted Governor

	relivery on control fever np 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	uel delivery d Control
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min	red travel cm³/1000 strokes / mm 7
LDA 900	0,75 bar 192,0-195,0 (189,0-198,0)	<b>-</b>	LDA 600 LDA 500	0,75 bar 209,0-211,0 (206,0-214,0) 0 bar 153,0-155,0 (150,0-158,0)	100	175,0 - 190,0 (171,0 - 194,0)

Checking values in brackets

8.85

rod travel

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### D. Adjustment Test for Manifold Pressure Compensator

MB 14,7 a -

Testatn =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)
PE 8 P LS 7801	0		11,2 - 11,4
+ RQ PA 762-2		0,30	11,7 - 11,8
		0,45	13,3 - 13,5
	1		

Notes

(1) when n

rev/min and gauge pressure

bar ( \* maximum full-load control rod travel)

6

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 CUM 3,9 a 2

2. Edition

VE 4/12 F 1150 R 123-2 0 460 424 008

Overflow temperature 45° C

DHK: 1 688 901 016/207 + 3 bar

supersedes 4,85 Cummins company: 4 BT-390 engine:

72 kW / 2300

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,3

 $\pm$  0,02 (0,04)

ses VDT-W-460/. . Charge-air press.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	2,3 - 2,7 <sub>mm</sub>		
1.2 Supply-pump pressure	900	4,8 - 5,4 bar (kgt/cm²)		
1.3 Full-load delivery with	_	- cm <sup>3</sup> /1000 stro	kes	
charge-air pressure Full-load delivery without	900	86,5 - 87,5 cm <sup>3</sup> /1000 stro	ķes	4,0 (4,5)
charge-air pressure	375	24,5 - 30,5 cm <sup>3</sup> /1000 stro	kes	3,5 (4,5)
1.5 Full-speed regulation	1230	20,0 - 28,0 cm <sup>3</sup> /1000 stro	kes	
1.6 Start	100	min. 97,0 cm <sup>3</sup> /1000 stro	kes	
1.7 Load-dependent port-closing	·			

2. Test Spe	cifications	checking values in bra	ickets ( )			· · · · · · · · · · · · · · · · · · ·
2.1 Timing device	n = rev/min mm	750 1,3-2,1 (1	,0-2,4)	900 (1,8-3,2)		1100 ,0 (2,9-4,3)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,3-2,9	4,2	750 2-4,8		1100 5-6,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	400 55-138 (4	0-153)		and the second s	1150 3 (40-153)
2.3 Fuel deliveries		<u> </u>			3. Dimer	ISIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1290 1230 1150 900 750 400		(19,0-29,0 (80,0-86,0 (84,0-90,0 (85,0-91,0 (83,7-91,3	)	K KF MS SVS	5,1-5,4 1,4-1,6 4,2
switch-off					<b>%</b> K <b>%</b> L	20,2-22,2
idie stop	450 375 300 130 200	max. 2,0 49,5-55,5 min. 97,0 max. 85,0	(22,5-32,5 (47,5-57,5		Observations Shutoff 375 min	check ELAB at
2.4 Solenoid	cut-in voltage	min. rated volta	10 Volt			

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WPP 001/4 PEU 1,9 b

6. Edition

VE 4/9 F 2300 R 162

Overflow temperature 45° C

supersedes 85 company:Peugeot engine: XUD 9

0 460 494 153 DHK 1 688 901 022/130 bar

Fuel injection test tubing 6x2x450 mm/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel  1.2 Supply-pump pressure  1.3 Full-load delivery with charge-air pressure Full-load delivery without charge-air pressure  1.4 Idle regulation  1.5 Full-speed regulation  1 6 Start  1.7 Load-dependent port-closing	1250 1250 - 1250 A 550 2400 100	3,2-3,6 3,9-4,5 - 29,5-30,5 2,5-3,5 20,0-26,0 min. 44,0	mm bar (kgf/cm²) cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes	od (kg/rem)	2,5 (3,0) B 2,0 (3,0)

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	700 0,2-1,0 (0-1,3)	1250 (2,7-4,1)	2009 7,5-8,3 (7,2-8,6)	
2 2 Supply pump	n = rev/min bar (kgf/cm²)	700 2,3-2,9	_	000 -6,5	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	700 42 <b>-</b> 83(27 <b>-</b> 98)		250 3 (40-153)	

23 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2650 2500 2400 2250 2000 1250 700	max. 7,0 11,5-17,5 (10,5-18,5) (19,0-27,0) 30,0-32,0 (28,8-33,2) 30,5-32,5 (29,3-33,7) (27,8-32,2) 29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop  End stop	A 550 B 375 C 470 200 300	2,5-3,5 8,5-10,5 (5,5-13,5) 8,0-10,5 (5,5-13,0) min. 40,0 max. 35,0	
2 4 Solenoid	cut-in voltage	e min. 10 V	

rated voltage 12 V

3. Dimen	tor assembly		
Designation	and adjustment mm		
к	3,2-3,4		
KF	5,7-6,0		
MS	1,3-1,5		
svs	3,0		
xĸ	18,9-20,9		
x <sub>r</sub> .	11,8-15,2		
	delivery		
setting idle setting (LFG) as per			
VDT-1-46	00/135		

Test Specifications Distributor-type Fuel-injection Pumps 46

WPP 001/4 FIA 1,7 i

1. Edition

VE 3/11 F 1200 L 163-3

Overflow temperature 45° C

supersedes company: Fiat

0 460 413 005 Fuel injection test tubing 1 688 901 020/172 +3 bar engine: 8035-05-265

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

mm  $\frac{+}{-}0,02(0,04)$ 

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,2-3,6	mm		
1.2 Supply-pump pressure	800	4,2-4,8	bar (kgf/cm²)		
1.3 Full-load delivery with	-		cm <sup>3</sup> /1000 strokes		
charge-air pressule Full-load delivery without	800	62,5-63,5	cm³/1000 strokes		3,5
charge-air pressure  1.4 (die regulation	350	13,0-17,0	cm <sup>3</sup> /1000 strokes		3,5
1.5 Full-speed regulation	1350	15,0-21,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 90	cm³/1000 strokes	,	
1.7 Load-dependent port-closing	-				

2.1 Timing device	n = rev/min mm	500 0,8-1,4 (0,4-1	800 (8) (2,7-4,1)	1100 5,7-6,5 (5	,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 2,9-3,5	1100 5,5-6,1	1200 6,0-6,6	)
Overflow delivery	n = rev/min cm³/10 s	500 41-83 (26-98)		1200 55-138 (40-	153)
2.3 Fuel deliveries	···•			3. Dimen	Sions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air pre bar (kgf/cm²)	ss Designation	mm
End stop	1400 1350 1300 1200 800 500	max. 2,0 (13 37,5-44,5 (36 56,0-59,0 (54 (60 59,5-62,5 (57	,5-22,5 ,5-44,5) ,8-60,2) ,3-65,7 ,6-64,4)	K KF MS SVS	- 5,2-5,5 1,5-1,7 4,0
switch-off	1400	0		-	
Idle stop  End stop	420 380 350 150	max. 2,0 3,0-9,0 (1, (10 mon. 100	5-10,5) ,5-19,5)	Observations	
e	250	max. 65 min. 10,0	<u></u>		

BOSCH

estoil-ISO 411

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 1.7 a

4. Edition

VE 4/8 F 2300 R 171

Overflow temperature 45° C

10.84 supersede Peugeot company: XUD 7

0 460 484 010 DHK 1 688 901 022/130 bar

Fuel injection test tubing 6x2x450 mm/1 680 750 073All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

see VDT-W-460/ .

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1250 1250	3,8- 4,2 4,3- 4,9	mm		
1.2 Supply-pump pressure 1.3 Full-load delivery with	-	-	bar (kgf/cm²) cm³/1000 strokes		
charge-air pressure Full-load delivery without charge-air pressure	1250	29,5-30,5	cm <sup>3</sup> /1000 strokes		2,5(3,0) B 2,0(3,0)
1.4 Idle regulation 1.5 Full-speed regulation	A 550 2400	3,5- 4,5 19,0-25,0	cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes		B 2,0(3,0)
1.6 Start	100	min. 42,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1250				

2. Test Spe	ecifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	700 0,2-1,0(0-1,3)	1250 (2,9 <b>-</b> 4,3)	2000 7,5 <b>-8</b> ,3(7,2 <b>-</b> 8,6)
2 2 Supply pump	n = rev/min bar (kgf/cm²)	700 2,8-3,4		2000 6,4-7,0
Overflow delivery	n = rev/min cm³/10 s	700 42-83(27 <b>-</b> 98)		2250 55-138(40-153)
2 3 Fuel deliveries				3. Dimensions

23 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2650	max. 7,0		
	2500		(10,5-18,5)	
	2400		(18.0-26.0)	
	2250		(26,7-31,3)	
	2000		(27,7-32,3)	
	1250		(27.7-32.3)	1
	700	29,5-32,5	(28,0-34,0)	
switch-off	2300	0		
idle stop	A 550	3,5 - 4,5	aphining qualifyrming and the scanning for 1750 Marks	
	B 350		(6.0-14.0)	
	C 470		(6,0-14,0)	
End stop	200	min. 44,0		
	300	max. 34,0		
2 4 Solenoid	cut-in voltage	min	10 V	

rated voltage 12 V

3. Dimen	for assembly and adjustment mm
к	3,2-3,4
KF	5,2-5,5
MS	1,3-1,5
svs	max. 3,0
4-4-	
XK	18,9-20,9
ХL	12,2-15,6
Observations * Recidua	ldelivery

Residual delivery setting idle setting (LFG) as per VDT-1-460/135

**BOSCH** 

## **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,1 f

2. Edition

**(:**".) 123

VE 4/9 F 2250 R 174 0 460 494 154

Overflow temperature 45° C

supersedes PSA-Mahindra XD 4/90 engine:

DHK: 1 6 88 901 022 / 130+ 3 bar

Fuel injection test tubing  $6 \times 2 \times 450$  mm

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

mm Pre-stroke setting

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel 1.2 Supply-pump pressure 1.3 Full-load delivery with charge-air pressure Full-load delivery without charge-air pressure 1.4 idle regulation 1.5 Full-speed regulation 1.6 Start 1.7 Load-dependent port-closing	1500 1500 - 1500 350 2400 100	3,8-4,2 5,5-6,1 31,0-32,0 7,0-11,0 11,0-17,0 min. 50	mm tiar (kgf/cm²) cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes		2,5(3,0) 2,0(3,0)

2. Test Spe	ecifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min कर्मा	1000 1,6-2,4 (1,3-2,7)	1500 (3,3-4,7)	2200 6,4-7,2 (6,1-7,5)
3.0 Supply gurity	n = rev/min bar (kgt/cm²)	400 2,0-2,6	220 7,4	=
Overiflow delfusity	n = rev/min cm³/10 s		225 55-138 (	-
	<u> </u>	<u>L</u>		72 Dimensions

i Francisco	10.57103		33-130 (
2 3 Fuel deliveries			
Speed control lever	Rot speed	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2500 2400 2350 2200 2000 1500 1000	max. 4,0 (10,0-18,0 21,0-27,0 (20,0-28,0 34,0-37,0 (32,8-38,2) 33,5-36,5 (32,3-37,7) (28,8-34,2 29,7-32,7 (28,2-34,2 30,8-33,8(29,5-35,3)	
switch-off			
ldle stop	350 400 550	(5,0-13,0) max. 4,0 max. 1,0	
End stop	350 450	min. 40 min. 44	
2.4 Solenoid	cut in volte	min. 10 V rated voltage 12 v	

(4	, 10-153)	
T	3. Dimens	for assembly
·	Designation	end adjustment mm
	K	3,2-3,4 5,7-6,0
	KF MS	1,2-1,4
	svs	2,5
	ХK	20,2-22,?
	XT.	12,0-15,4
1	Observations	<u> </u>

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WPP 001/4 STE 2,3 b 1

1. Edition

En

PES 3 A 75 D 310 RS 1215

RSV 250-900 A7B 719 DL

supersedes -

company Steyr
WD 308 S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,45-2,55 (2,40-2,60)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm 1/100 strokes 3	Difference cm <sup>-y</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm'/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0+0,1	3,9-4,2	0,4			
200	9,0	1,8-2,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	rated speed Control rod travel mm		Intermed	trate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm		rque control  Control rod  travel  mm
ca. 60	950 950 980	16,0 10,0 5,2	<del></del>			ca. 25	250 100	6,0 19,0-21,0	880 850 350	0 0,1-0,3 0,2-0,4
28	950 1000 1070	8,4-11,0 3,1-5,1 0,3-1,0	with spri	auxil ng	iary		250 400 550	5,7-6,3 1,3-3,7 0-1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Fu	2b) Full-load stop 6 Rota			uel delivery naracteristics	Starting (	Starting fuel delivery 5 4a Idle stop				
Test oil te rev/min	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm³/1000 strokes	rev/min	cm //1000 strokes	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9		
900	61,0-63,0	930-940			100	16,0-16,6 mm RW				

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.85



40

WPP 001/4 STE 3,1 b

1. Edition

\_\_\_\_

PES 4 A 75 D 410 RS 1215 Komb.-Nr. 0 400 474 152 RSV 250-900 A7B 719 DL

supersedrs
Company Steyr
WD 408 S

estoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,45-2,55 Port closing at prestroke (2,40-2,60)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm 1/100 strokes	cm <sup>-/</sup> 100 strokes 4	mim 2	cm <sup>-/</sup> 100 strokes 3	mm 6
900	11,5+0,1	5,9-6,0	0,25(0,4)			
250	5,4-5,6	1,0-1,6	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

Degree of deflection of confire	deflection (vave)		Interm	Intermediate rated speed  Control- lever deflection in degree			tion rev/min rnm			Torque control Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
loose	800	0,3-1,0	_	-	-	ca. 25	250	5,5	900	11,5-11,6	
							100	min.19,5	500 750	11,7-11,9 11,7-11,9	
ca. 60	10,5 4,0 1100	930-940 965-995 0,3-1,7					250 405-4	5,9-6,1 65=2,0			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

ピツ	ill-load stop	6 Rotational Speed limitat Speed limitat Characteristics			Starting fuel delivery 5 4a idle stop idle				
Test oil te rev/min 1	cm /1000 strokes	Note changed to ) rev/min 3	rev/min 4	cm /1000 strokes 5	rev/min 6	cm41000 strokes 7	rev/min 8	travel mm 9	
900	58,5-59,5 (57,0-61,0)	-	_	-	100	84,0-94,0 81,0-97,0)			

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuftgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MWM 5,9 a 2

1. Edition En

PES 6 A 80 D 320 RS 1271

Komb.-Nr. 9 400 085 238

RSV 350-1400 A 2 B 2196 R

supersedes

company

MWM D 229-6

engine 127,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,2-2,3 (2,15-2,35)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	mm <b>2</b>	cm //100 strokes 3	cm <sup>-</sup> / 100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes 3	mm 6
1380	9,5+0,1	5,3 - 5,4	0,25(0,4)			
350	6,9-7,1	0,8 - 1,1	0,2 (0,35)			
						1

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed		Intermediate rated speed			Lower rated speed			3 forque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever dellection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min	Control rod travel mm
loose	800	0,3-1,0 5,5	-	-	-	ca. 21	350 100	6,5 min.19,0	1380 500	9,5- 9,6 10,9-11,0
ca.54	8,5 4,0 1650	1420-1430 1470-1500 0,3-1,7					350 640 - 850	6,9-7,1 700 =2,0 max. 1,0	800 1100	10,7-10,9 10,0-10,3

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

9	III load stop	6 Rotational speed limitat		iel delivery paracteristics	Starting tidle	luel delivery (5)	(4a) (d)	e stop
Test oil temp 40°C (104°F) rev/min cm*/1000 strokes 1 2		Note changed to ) rev/min 3	rev/min cm <sup>1/1000</sup> strokes		rev/min	cm:/1000 strokes 7	Control re travel rev/min mm 8 9	
1380	52,5 - 53,5 (51,0 - 55,0)	1420-1430*	800	54,0 - 56,0 (52,0 - 58,0)	100	19,0-21,0 mm RW	-	-
500	52,0 - 54,0 (50,0 - 56,0)		1100	54,5 - 56,5 (52,5 - 58,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3. Edition

Testoil-ISO 4113

PF6A90D410RS2124

RO 450/1250 AB 812

supersedes 1.83

company Daimler-Benz OM 360

141 kW (192 PS)

Komb.-Nr. O 400 646 229

1 - 5 - 3 - 6 - 2 - 4  $0 - 60-120-180-240-300^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,2+0,	8.6 - 8.7	0,3(0,45	)		
450	5,9-6,1	1,2-1,8	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	ck (1)		util-load speed regulation Setting point   Test specifications (   Control   Control				Idle speed regulation Setting point   Test specifications			Torque control  Control rod		
rev/min	Control rod travel mm 2		Control rad travel mm 4	Central red travel mm	rev/min 6	rev/min 7	Central rad travel rnm 8	rev/min 9	Control rod travel mm	rev/min	travei	
700	15,5-16,4	700	16,0		1295-1310 1345-1375	450	6,0	450 600	min. 7,5 5,9-6,1 0 - 1,0 540=2,0	_	-	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1295-1310 min

1 mm less control

7.85

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics (3b)	Starting f Idle spee	uel delivery d (Contrel
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm³/-1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
1250	86,0 - 87,0 (84,0 - 89,0)	800	800	80,0 - 83,0 (78,0 - 85,0)	100	115,0-125,0 (112,0-128,0) = min. 16,0 mm RW

Checking values in brackets

WPP 001/4 MB 8,7 c 3 3. Edition

PE 6 A 90 D 410 RS 2124 X Komb.-Nr. O 400 646 151

RQ 300/1275 AB 658 DL

supersedes 11.84 <sub>company</sub> Daimler-Benz OM 360 125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
Port closing at prestroke
2,15-2,25
m Port closing at prestroke mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1250	9,3-9,4	7,7 - 7,8	0,3(0,45)			
300	6,1-6,3	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	g of slider ock	Full-load : Setting po	•			Idle speed regulation Setting point   Test specifications (5)				Torque control		
rev/min 1	Control rod travel mm 2	rev/min 3	Control red travel mm 4	Central rad travel rnm 5	rev/min 6	rev/min 7	Centrel rad travel mm 8	rev/min	Control rod	rev/min 11	Control rod (travel)	
700	15,6-16,4	700	16,0	8,3 4,0	1295-1310 1345-1375	300	5,0	300 350-3	min. 6,5 4,9-5,1 90 = 2,0 max. 1,0	1250 500 850 1040	9,3-9,4 10,1-10,2 9,8-10,0 9,4-9,7	

Torque-control travel on flyweight assembly dimension a =

Speed regulation At 95-1310 min<sup>-1</sup>

1 mm less control rod travel

#### C. Settings for Fuei Injection Pump with Fitted Governor

	delivery on control lever np 40°C (104°F)	Centrol rod stop 3a	Fuel deliv	ery characteristics (	-1	Starting f		<b>6</b>
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5		rev/min 6		travel
1250	77,0-78,0 (75,0-80,0)	450	500 800	69,0-72,0 (67,0-74,0) 77,0-80,0 (75,0-82,0)		100	min. 16,0 mm	n.

Checking values in brackets

7.85

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Festoil-ISO 4113

40

WPP 001/4 MAN 9,7 m 1 2.Edition

n

PES 6 A 95 D 420 LS2328

RQ 200/1100 AB782DR

supersedes 3.76

All D 2356 HMXU engines must, when repairing, be changed to  $rac{c}{c}$ 

company MAN engine D 2356 HMYU\*

D 2356 HMYU in accordance with test specifications below.

(220 PS)\*

Komb.-Nr. 0 400 846 239

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,5			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

PRG che	ck Control rod travel	Full-load s Setting po rev/min 3	•	•		Idle spec Setting p rev/min 7	Coint Control red travel mm	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod
600	15,7-16,3	600	16,0	1120 1150 1180 1240	15,6-16,0 9,0-14,2 0 - 10 0	550	0	100 200 300 450	6,6-8,1 5,4-7,3 3,3-5,3 0	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	letivery on control tever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting for speed of the speed	Contrel
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /~1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes/mm 7
1100	125,5 - 127,5 (123,5-129,5)	500	800	1250 - 128,0 (123,0-130,0)	100	14,0-14,4 mm RW
			500	max. 122,5 (max. 124,5)	500	6,5 mm

Checking values in brackets

3.85

**BOSCH** 

WPP 001/4 KHD 8,8 a 4

1. Edition

PES 5 A 95 D 410 RS 2417 Komb.-Nr. 0 400 845 081

RQV 300-1250 AB 1211 L

supersedes -

company: KHD

engine

F 5 L 413 FR 88 kW/2500 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,9 - 2,0 (1,85-2,05) Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,0+0,1	9,9-10,1	0,35(0,6)			
300	6,4-6,6	1,0-1,6	0,35(0,55	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated :	speed	•	Intermediat	e rated sp	eed	Lower rated	speed	_	Sliding	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod (revel) mm rev/min (2)	of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm
max.	1280	15,2-17,8	3 -	-	-	ca. 18"	300	5,7-5,9	250	1,0-1,2
ca. 54	9,0 4,5 1500	1290-1300 1350-1380 0-1,0	•			365-480			500 1000 1250	3,2-3,5 6,2-6,4 8,3
						<b>3</b>				

Torque control travel a = 0,20 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter rev/min		intermediate speed	Fuel delivery characteristics 56 high idle speed 50 cm³/1000 strokes		high idle spee		Starting fuel delivery 6 Idle switching point rev/min cm³/1000 strokes		Torque- travel	Control 5  Control rod travel mm
1250	99,0-101,0 (97,0-103,0)	1290-1300*	600	91,5-94,5 (89,0-97,0)	100	120,0-130,0 =14,2-14,6 mm RW	8 1250 600 715 765	10,2+0 10,1-0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.85

Geschäftsbareich KH. Kundendienst. Kfz-Ausrustung c. by Robert Bosch GmbH. D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

2

estoil-ISO 4113

## Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 OMB 4,4 a

2. Edition

engine

<u>En</u>

PES 4 A 90 D 410 RS 2442 RQ 275/1300 AB994L Komb.-Nr. 0 400 844 070 Control switch must light up at n = 1480-1490

supersedes 10.77 company OM-Brescia

C03/130 81 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2.10-2.30)

mm (from BDC)

		2,10-2,30				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm 1/100 strokes	100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1300	11.7+0	8,1 - 8,2	0,2(0,35)			
275	8,3-8,5	1,5 - 2,1	0,2(0,3)			
	ļ					
	1		<u> </u>	1	l	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checking of slider	Full-load	speed re	gulation		idle spec	ed regula	ation		Torque (	control
	Setting po	oint	Test spe	cifications	Setting p	oint	Test spe	cifications	ŀ	
Control rod travel mm 2  900 15,6-16,4	rev/min 3	Control red travel mm 4	10,7 4,0 1600	Control rod travel mm 6 1345-1360 1470-1500	rev/min 7 275	Control rad travel	100 275	Control rod travel mm 10		Control rod travel mm 12 11,7-11,8 12,2-12,4

Torque control travel on flyweight assembly dimension a

mm

Speed regulation 1345-1360 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	lelivery on control lever mp 40°C (104 F)	Control rod stop	Fuel deliv	ery characteristics	Starting	luel delivery
rev/min 1	cm <sup>1</sup> /-1000 strokes 2	rev/min 3	rev/min	cm³/-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1 <b>000</b> \$rokes
1300	80,5 - 81,5 (78,5 - 83,5)	•	650	79,5 - 82,5 (77,5 - 84,5)	100	120,0-133,0 (117,0-133,0) = 16,9-17,5 mm R7

Checking values in brackets

4.85

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz. Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 TAM 12.7 a

1. Edition

E

PE 8 A 95 D 410 LS 2451 RQV 300-1150 AB 1045-1 L 1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45°  $^{+}$  0,5° ( $^{+}$  0,75°) supersedescompany TAM engine F 8 L 413 F 173 kW/2300 min<sup>-1</sup>

Komb.-Nr. 0 400 648 143

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	TTORO	(1,95-2,15)	mm (from BDC)			
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	9,3-9,4	8,6-8,8	0,3(0,6)			
300	5,9-6,1	1,4-2,4	0,3(0,5)			
				<u> </u>	<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	raled sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection	rev/min Control rod travel	Control rod travel	Degree of deflection of control		Control rod travei	Degree of deflection of control		Control rod travel		0
-	WILL	rev/min (28)	lever	rev/min	mm (4)		rev/min	mm ③	rev/min	
1	2	3	4	5	6		8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 16		min.7,5	200	0,7-0,9
62 45	8,3	1190-1200	†				300	5,9-6,1	600 850	3,9-4,1 6,9-7,1
ca. 46	4,0	1225-1255				i			1200	8,4
	1350	0-1,0				330-449				<b>.</b>
	:					<b>3</b> 9				

Torque control travel a = 0.40 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed ②b limitation intermediate speed	high idle speed (50)		idie switchii	fuel delivery 6	Torque travel	Control 5  Control rod travel
1	2	3	4	5	6	7	8	9
1150	86,0-88,0 (84,0-90,0)	1190-1200*	1000 700	86,5-89,5 (84,5-91,5) 86,5-89,5 (84,5-91,5)	100	116,5-126,5 (113,5-129,5)	500 840	9,3+0,1 9,7+0,1 9,6+0,2 9,4+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.86

**BOSCH** 

Testoil-ISO 4113

WPP 001/4 MAN 11,1 g 1

2. Edition

(1)

PES 6 A 95 D 410 LS2485Z

RQ 250/1100 AB839DL

supersedes 8,77 MAN company:

LS2485Y

RQ 250/1100 AB839DL (2)

D 2566 .. engine

LS2485Y

RQ 250/1100 AB965DL (3)

**MSFV** (1-220 PS)

MFO/MFOR MFO/MFOR

(2- 220 PS) (3- 200 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 1,50-1,60 Port closing at prestroke (1,45-1,65)

mm (from BDC)

. Ort Growing at proof		1,45-1,65)				<del></del>
Rotational speed rev/min 1	Control rod travel mm	Fuel delivery Z, Y + 839DL cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strekes 4	Control rod travel mm 2	Fuel delivery Y + 965DL cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2+0,	11,2 - 11,4	0,3(0,6)	10,0	10, 1 - 10, 3	]
	ş			(+0,1)		
250	5,9-6,1	1,1-1,7	0,3(0,5)			
l	1		ł	i	<u> </u>	_1

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Z + 839DL (1)

Checking PRG che	g of slider ck (1)	Full-load s Setting po	•	_		Idle spec Setting p	_		cifications (5)	Torque d	(3)
rev/min	Control rod travel mm	l	Control red travel rnrn 4	Centrel red travel rmm	rev/min	rev/min 7	Control red travel rnm 8	rev/min	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,2 4,0 1300	1175-1205		6,0	250	min. 7,5 5,9-6,1 100 = 2,0 max.1,0	800	11,2-11,3 11,5-11,6 11,5-11,7
								15 4	160 min =1	<u> </u>	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever ap. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	[ Control
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm³/-1000 strokes	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm
1100	112,0 - 114,0 (110,0 - 116,0	-	800	114,5 - 117,5 (112,5 - 119,5)	100 250	114,0=120,0 (111,0=125,0) 6,0
			500	111,0 - 114,0 (109,0 - 116,0)	230	0,0

Checking values in brackets

4.25

2

#### **B. Governor Settings**

Y + 839DL (2)

Checkin	ng of slider	Full-load Setting p	•	•	cifications		Idle speed regulation Setting point   Test specifications			Torque control		
rev/min 1	Control rod travel mm 2	rev/min	Control rad travel mrn 4	rev/min 5	Control rod travel	rev/min 7	Control red travel	i i	Control rod travel	rev/mir 11	Control rod travel mm 12	
600	15,6-16,4	600	16,0		1145-1160		6,0	250	5,9-6,1		11,2-11,3	
1100 1300	Breakway 0 - 1			4,0	1175-1205		:	340- 500	400 = 2,0 0 - 1	800	11,5-11,6	

Torque-control travel on flyweight assembly dimension a =

0,2 mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting	Starting fuel delivery		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm³/100 strokes 7 mm RW		
1100	112,5 - 114,5 (110,5 - 116,5)		800	114,5 - 117,5 (112,5 - 119,5)	100 250	13,0-13,6 6,0		
			500	110,5 - 113,5 (108,5 - 115,5)		0,0		
			500					

Checking values in brackets

#### **B.** Governor Settings

Y + 965DL (3)

Checking of slider Full-load speed reg			Julation		Idle speed regulation				Torque control		
Control rod		Centrel				Control		cifications Control rod travel		Control rod	
rev/min 1		rev/min 3	mm 4	rev/min 5	mm 6	rev/min 7	កាកា 8	rev/min 9	mm 10	rev/min 11	mm 12
600	15,6-16,4	600	16,0	9,0 4,0			6,0		min.7,9 6,3-6,5	-	-
1100	Breakway			',	1			360-4	20 = 2,0		
1300	0 - 1							500	0 - 1		
		ł									

Torque-control travel on flyweight assembly dimension a =

Λ mn

Speed regulation: At

1 ram less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel deliv	ery characteristics	Starting 1	Starting fuel delivery		
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm³/100 strokes 7 mm RW		
1100	99,5 - 101,5 (97,5 - 103,5)		500	86,5 - 91,5 (84,5 - 93,5)	100 250	13,6-14,2 6,0		

WPP 001/4 MAN 9,2 d

#### Edition

PES 5 A 95 D 410 LS2488

RQ 250/1100 AB839D (1) supersedes 5.84 MAN company:

LS2488Y

RO 250/1100 AB839D (2)

D 2565 M/MF

141 kW/2200 min 123,5 kW/2200 min

Komb.-Nr. 0 400 845 028 (1) MAN-Nr. 7724 0 400 845 036 (2) MAN-Nr. 7844

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(0.45-1.65)

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2+0,	11,8 - 12,0	0,3(0,6)	9.9+0.1	10.0 - 10.3	
250	5,9-6,1	1,4 - 1,9	0,3 (0,5	5,9-6,1	1,1- 1,7	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1)

PRG che	Control rod travel	1	int		rev/min	Idle spec Setting p	Control red travel	Test spe	cifications Control rod travel mm	Torque o	Control rod
600	15,6·16,4	600	16,0	1100 1150 1200 1250	15,1-15,4 9,0-14,0 0 - 7,2 0 - 1,5		0	100 200 300 500	6,9-8,1 5,6-7,6 3,3-5,5 0 - 1	1	15,8-16,0 15,3-15,5
Torque-c	control travel		0,2					145 -	1160 =		1 mm less control

Speed regulation At

#### on flyweight assembly dimension a = C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop 3a	Fuel deliv	ery characteristics 3b	] Control		
rev/min 1	cm³/~1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	rad travel cm <sup>3</sup> /1000 strokes/mm 7	
1100	117,5 - 119,5 (115,5 - 121,5)		800 500	116,5 - 120,5 (114,5 - 122,5) 114,5 - 108,5 (112,5 - 120,5)	100	1165 - 126,5 = 13,7-14,3 mm RW	
						./.	

Checking values in brackets

4.85

rod travel

#### **B.** Governor Settings

RQ.. 839DL + 2488Y

Checkin	ig of slider	Full-load	speed re	gulation		ldie spe	ed regul	ation		Torque control	
rev/min	Control rod travet mm 2	Setting p rev/min 3	oint Control rad travel mm 4	•	cifications Control rod travel mm 6	Setting rev/min 7	point Centrel red travel rnm 8	rev/min	ecifications Control rod travet mm 10	rev/mir	Control rod travel mm 12
600	15,6-16,4	600	16,0	1100 1150 1200 1250	15,1-15,4 9,0-14,0 0 - 7,2 0 - 1,5			200	6,9-8,1 5,6-7,6 3,3-5,5 0 - 1	900 1030	15,8-16,0 15,3-15,5

Torque-control travel on flyweight assembly dimension a =

0,2 mm

Speed regulation: At 1145 - 1160 =

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop	Fuel deliv	rery characteristics	Starting fuel delivery		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1005strokes 7	
1100	99,0 - 101,0 (97,0 - 103,0)		800 500	100,5 - 104,5 ( 98,5 - 106,5) 95,0 - 99,0 ( 93,0 - 101,0)	100 250	119,0 - 124,0 6,0 mm RW	

Checking values in brackets

Testoil-ISO 4113

#### **B.** Governor Settings

Checkin	g of slider	Full-load	speed re	gulation		idle spec	ed regula	tion		Torque o	orque control	
	Setting p		pint	Test spe	cifications	Setting p	point	Test spe	ecifications			
rev/min	Control rod travel mm 2	rev/min	Control rad travel rmm	rev/min 5	Control rod travel	rev/min	Centrel red travel mmn	rev/min 9	Control rod travel mm 10	rev/min	Control rod travel mm 12	
						}						
		1										
							•					

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation. At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

tontavop	delivery on control lever mp. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting t	Starting fuel delivery		
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 6	cm³/100 strokes 7		
<del></del>								
					1			
			İ					

E 13

2

# Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11,1 i

2. Edition

PES 6 A 95 D 410 LS 2489 Komb.-Nr. 0 400 846 377

RQ 250/1100 AB 965 DL

supersedes2.76 company: MAN

D 2566 MXUM/UH 213 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

RW = 9.0 - 12.0 mm

		1,43-1,007			-,,-	1011
Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,2+0,1	12,7-12,9	0,3 (0,6)			
250	6,0-6,2	0,9-1,3	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	_	Full-load : Setting po	•	•	cifications (4)	Idle spec	•		cifications (5)	Torque	control (3)
rev/min	Control rod travel mm	rev/min 3	Control red travel rnm 4	Central red travel rnero 5	rev/min	rev/min 7	Central rad travel mm	rev/min 9	Control rod travel	rev/min 11	travel
600	15,6-16,4	600	16,0	11,2 4,0	1145-1160 1185-1215		6,0	100 250 330-	min. 7,5 5,9-6,1 370 = 2,0	1100 500	12,2-12,3 12,2-12,4

Torque-control travel on flyweight assembly dimen-

Speed regulation: At 1145-1160 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	d Control	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes / mm 7	
1100	126,5-128,5 (124,5-130,5)	-	500	max. 121,5 (max. 123,5)	100	116,5-126,5 (113,5-129,5)	

Checking values in brackets

11.85

2

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 i 1

1. Edition

PES 6 A 95 D 410 LS 2489 Z

RQ 250/1100 AB 965 D

supersedes...

company MAN

D 2566 MUH/M engine.

155 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

troke (		mm (from BDC)	mm (from BDC)								
Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6						
10,1+0,1	10,3-10,5	0,3 (0,6)									
5,9-6,1	1,2-1,8	0,3 (0,5)									
			:								
	Control rod travel mm 2 10,1+0,	Control rod travel  mm cm³/100 strokes 2 3  10,1+0,1 10,3-10,5	Control rod travel  mm cm³/100 strokes 2  10,1+0,1  10,3-10,5  mm (from BDC)  Difference cm³/ 100 strokes 4	Control rod travel  mm cm³/100 strokes 2  10,1+0,1  10,3-10,5  Control rod travel  cm³/100 strokes 4  Control rod travel  mm 2  0,3 (0,6)	Control rod travel  mm cm³/100 strokes 3  Control rod travel  cm³/100 strokes 4  Control rod travel  cm³/100 strokes 2  Control rod travel  cm³/100 strokes 2  mm cm³/100 strokes 3  10,1+0,1  10,3-10,5  0,3  (0,6)						

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel	Full-load : Setting po rev/min 3	•	•	rev/min	l'	Control red travel		Control rod travel mm	Torque o	Control rod (3)
600	15,6-16,4	600	16,0	1140 1180 1220 1260	15,6-16,0 6,6-12,8 0-7,0 0		0	150 250 350 460	7,0-8,1 5,3-7,5 2,4-4,6 0	-	-
	ontrol travel ght assembly dimen	sion a =	0	mm	Spe	ed regula	ation: At	1145-1	1160 min <sup>-1</sup>		1 mm less control rod travel

on flyweight assembly dimension a = C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	2)	Control rod stop	9	Fuel deliv	ery characteristics	3	Starting fuel delivery Idle speed Control		
rev/min 1	cm <sup>-</sup> /-1000 strokes 2		rev/min 3		rev/min 4	cm <sup>3</sup> /~1000 strokes 5		rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7	
1100	101,5-103,5 (99,5-105,5)		-		500	88,5-92,5 (86,5-94,5)		100 250	111,0-119,0 6,0 mm RW	

Checking values in brackets

11.85

WPP 001/4 KHD 4,1 c 6

1. Edition

PES 4 A 80 D 410 RS 2523 Komb.-Nr. 9 400 093 229

RSV 325-1075 A1B 1111 DL

supersedes Deutz Argentinien company F 4 L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1.85-2.05)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>1/</sup> 100 strokes 3	Oifference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm	Fuel delivery cm //100 strokes 3	Spring pre-tensioning (forque-confrol valve) mm 6
1075	10,2+0,1	6,0-6,1	0,25 (0,4)			
325	6,4-6,6	0,6-0,9	0,2 (0,35)			
	<u> </u>			<u> </u>	<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	er rated speeg		Interm	ediate rate	d speed	eed 4 Lower rated speed				3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
loose	800 x = 6	0,3-1,0	-	-	-	ca. 32	325 100 325	6,0 min.\9,0 6,4-6,6	1075 500	10,2-10,3		
ca. 65 <b>29</b>	9,2 4,0 1300	1115-1125 1160-1190 0,3-1,7					510-57					

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Ft	ill-load stop	6 Rotational- speed limitat	6 Rotational- speed limitat 3a Fuel delivery characteristics				Starting fuel delivery 5 4a Idle stop				
Test oil for rev/min 1	emp 40°C (104°F) cm /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	Control rod travel mm			
1075	60,0-61,0 (58,5-62,5)	1115-1125*	500 750	60,0-62,0 (58,0-64,0) 58,0-60,0 (56,0-62,0)	100	19,0-21,0 mm RW	-	_			

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.85

Geschäftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

# Test Specifications 40 Fuel Injection Pumps 2 WPP 001/4 DAF 8,3 k and Governors

8 . Edition

PE 6 A 95 D 410 RS 2525

RQ 225/1200 AB 1007 L

supersedes 1.85

DAF company:

engine

**DHR 825** 

Values apply to fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,8 - 11,0	0,35(0,6	)		
225	5,7-5,9	0,7-1,2	0,35(0,5	)		
Port closin travel 9 m	F	nce between cor . 3 - 4° ca	trol-rod mshaft			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	( )	Full-load Setting p	•	-	cifications (4)	Idle spe	•		cifications (5)	Torque	control 3
rev/min 1	Control rod travel mm	rev/min 3	Control red travel rnm 4	Central red travel rmm 5	rev/min 6	rev/min 7	Central rad travel rrum	rev/min 9	Control rod travel	rev/min	travel
650	19,2-20,8	650	20,0	11,6	1230-1245	225	5,8	100	· · • · ·	1000 1200	12,6-12,7 12,5-12,7
VH =	max. 46°			4,0 1390	1315-1345 0 - 1,0			225 340-3 450	5,7-5,9 80 = 2,0 max. 1,0		

Torque-control travel on flyweight assembly dimension a

1230-1245 min<sup>-1</sup>

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of governor of Test oil ter	lelivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting t	
rev/min 1	cm <sup>3</sup> /-1600 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Centrel red travel cm <sup>3</sup> /1000 strokes/mm 7
LDA 1000	0,7 bar 109,0 - 110,0 (107,0 - 112,0)		LDA 600	0 bar 85,5 - 86,5 (83,5 - 88,5)		120,0-130,0 117,0-133,0) = 19,5-21,0 mm RW

Checking values in brackets

10.85

Geschäftsbereich KH. Kundendienst. Kfz-Ausrustung. © 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

### D. Adjustment Test for Manifold Pressure Compensator

DAF P. A.

Testatn -

1000

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure : bar	Gauge pressure = bar	mm (1)
PE 6 ARS 2525 +AB 1007 L	0,7	0,30 0,26 0	12,6 - 12,7 12,3 - 12,4 11,7 - 12,0 11,5 - 11,6

Notes

(1) when n

rev/min and gauge pressure

bar ( maximum full load control rod travel)

40

WPP 001/4 DAF 8,3 k 7

1. Edition

E

PE 6 A 95 D 410 RS 2525 Komb.-Nr. 0 400 676 185 RSV 250-1200 A5C 2198-3 L

supersed DAF
company DAF
engine DH 825

Festoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BD\$) RW = 7,5-10,5 mm

	cm/100 strokes	cmy 190 strokes	travel	cm /100 strokes	(torque-control valve)
0,4+0,1		0,35(0,6)	2	3	6
6,0-6,2	0,7-1,1	0,35(0,55)			
2	0,4+0,1	0,4+0,1 7,3-7,5	0,4+0,1 7,3-7,5 0,35(0,6)	0,4+0,1 7,3-7,5 0,35(0,6)	3 4 2 3 0,4+0,1 7,3-7,5 0,35(0,6)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Uppe Degree of	_	Control rad	Intermed	liate rated	speed	(4) Control	Lower	rated speed Control rod	I(	rque control Control rod
deflection of control lever	travel mm	travel mm rev/min	4	5	6	lever deflection in degrees 7	rev/min	travel mm 9	rev/min	travel mm 11
loose	800	0,3-0,7	-	-	-	ca. 24	250	5,6	1200	10,4-10,5
	x =	4,3					100	min.19,5		11,2-11,3
ca. 58	9,4 4,0 1500	1240-1250 1320-1350 0,3-1,4					250 655-7,15	6,0-6,2 =2,0	940	10,7-11,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	il load stop	6 Rotational speed limitat	12-34-1			uel delivery 5	4a) Idle stop	
Test oil to rev/min 1	emp 40°C (104°F) cm /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm//1000 strokes 5	rav/min 6	cm/1000 strakes 7	rėv/min R	Control rod travel mm
1200	73,0-75,0 (71,0-77,0)		300	74,5-77,5 (72,0-80,0)	100	120,0-130 (117,0-133	0 - 0)	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

E14

WPP 001/4 KHD 5,1 d 1

1. Edition

PES 5 A 80 D 410 RS 2526 Komb.-Nr. 9 400 093 228

RSV 325-1075 A1B 1111 DL

supersedes = Deutz Argentinien company F 5 L 913 engine

1-3-5-4-2- je 72° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-150 4113

1,9-2,0 (1,85-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	mm (2)	cm /100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1075	9,4-9,5	5,3-5,4	0,25 (0,4)			
325	6,4-6,6	0,6-0,9	0,2 (0,35)			
			Ì			

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travet mm rev/min	Interm	ediate rate	ed speed	Control lever deflection in degrees	Lower	rated speed Control rod travel mm	IL 9 /	rque control Control rad travel mm
1	2	3	4	5	6	7	8	9	10	0.4.0.5
loose	800 x = 9	0,3-1,0 6,25	-	•	-	ca. 32	325 100 325	6,0 min.19,0 6,4-6,6	1075 500 800	9,4-9,5 11,2-11,3 10,4-10,7
ca. 65 <b>2</b>	8,4 4,0 1300	1115-1125 1150-1180 0,3-1,7					510-57			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	6 Rotational- speed limitat	39 F.	uel delivery naracteristics	Starting (	uel delivery 5	<b>4a</b> ) Idl	e stop   Control rod
rev/min	cm <sup>1/1000</sup> strokes	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm/1000 strokes 7	rev/min 8	travel mm 9
1075	52,5-53,5 (50,5-55,5)	1115-1125*	500 800	61,5-63,5 (59,5-65,5) 57,0-59,0 (55,0-61,0)	100	19,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.85

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 KHD 5,1 e

1. Edition

RS 325/1400 A0B 2212 L

Deutz Argentinien F 5 L 913

Komb.-Nr. 9 400 085 255

PES 5 A 80 D 410 RS 2526

1-3-5-4-2 je 72° ± 0,5 ° (± 0,75 °)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 1,9-2,0 Port closing at prestroke (1,85-2,05) mm

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>-y</sup>	Control rod travel	Fuel delivery	Spring pre-tensioning (torque control valve)
rev/min	mm (2)	cm1/100 strokes	100 strokes 4	mm 2	cm /100 strokes	mm 6
1400	11,5+0,1	6,6-6,7	0,25 (0,4)			
325	8,4-8,6	1,0-1,3	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 1 1	rated speed Control rod travel mm	frev/min Control rod travel mm rev/min	Intermed	tiate rated	speed 6	Control- lever deflection in degrees 7		rated speed Control rod travel mm	3 to	rque control Control rod Iravel mm
loose	800 X	0,3-1,0 = 2,0	-	•	-	FH ca.28	325 280	8,5 8,8-9,6	1400 500	11,5-11,6 12,2-12,3
VHca.55	4,0	1440-1450 1500-1530 0,3-1,7					420 550 1300	5,6-6,4 max. 4,4 max. 3,8	1100	11,8-12,1

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ill load stop emp_40°C (104°F)	Rotational speed imitat	16361	Fuel delivery characteristics		uel delivery 5	48 Idle stop  Control rod		
rev/min	cm·/1000 strokes	changed to ) rev/min 3	rev/min 4	cm1/1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	travet mm 9	
400	65,0-66,5 (64,0-68,0)	1440-1450*	500	55,5-57,5 (53,5-59,5)	100	19,0-21,0 mm RW	-	-	
			1100	62,0-64,0 (60,0-66,0)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.85

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WPP 001/4 DAF 6,2 i 6

1. Edition

PE 6 A 90 D 320 RS 2547 Komb.-Nr. 0 400 676 180

RSV 250-1200 A5C 2203 R

supersedes company DAF engine DT 615

814 O 318

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,2 - 2,3 (2,15-2,35)

mm (from BDC)RW = 7.5-10.5 mm

Rotational speed rev/min t	Control rod travel mm 2	Fuel delivery cm <sup>-//</sup> 100 strokes 3	Difference cm <sup>1</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> 100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	7,2-7,3	0,3 (0,45)			
250	5,9-6,1	0,9-1,3	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	Control rod travel mm rev/min	Interme	diate rated		Control- lever deflection in degrees	rev/min	rated speed  Control rod  travel  mm	rev/min	rque control Control rod travel mm
loose	800 x =	0,3-0,7 3,3	-	<u>-</u>	<u>-</u>	ca. 22	250 100 250	5,5 min.19,5 5,9-6,1	400	10,8-10,9 11,2-11,3 11,2-11,7
ca. 54 <sub>2</sub>	9,8 4,0 1490	1240-1250 1310-1340 0,3-1,4					585-64			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp 40°C (104°F)	Rotational- speed limitat	11.361	iel delivery paracteristics	Starting I	uel delivery 5	4a) Idle stop		
rev/min	cm <sup>1</sup> /1000 strokes	changed to ) rev/min	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm /1000 strokes 7	rev/min 8	travel mm	
LDA 1000	0,7 bar 71,5-72,5 (69,5-74,5)	1240-1250*	LDA 600	0 bar 51,5-53,5 (49,0-56,0)	100	140,0-150 (137,0-153	0 - 0)	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.85

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# D. Adjustment Test for Manifold Pressure Compensator DAF 6,2 i 6

- 2 -

Test at n =

1000

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
÷	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 ARS 2547 + A5C 2203 R	0,7	0,25 0,21 0	10,8-10,9 10,6-10,7 10,2-10,5 10,0-10,1

Notes

(1) when n =

rev/min and gauge pressure =

bar ( maximum full-load control rod travel)

40

WPP 001/4 KHD 6,1 d 3

1. Edition

PES 6 A 80 D 410 RS 2527 Komb.-Nr. 9 400 093 226

RSV 325-1150 A1B 1111 L

supersedes-

company Deutz Argentinien F 6 L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,9-2,0 (1,85-2,05)

mm (from BDC)

Rolational speed	Control red travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control validation)
rev/min	mr (2)	cm1/100 strokes	cm <sup>-</sup> / 100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
1150	9,3-9,4	5,4-5,5	0,25 (0,4)			
325	6,4-6,6	0,6-0,9	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	3 to	rque control Control rod travel mm
loose	800 x = 4	0,3 <b>-1,</b> 0	-	-	•	ca. 32	325 100 325	6,0 min.19,0	1150 500 800	9,3-9,4 11,1-11,2 10,2-10,5
ca. 60	8,3 4,0 1300	1190-1200 1215-1245 0,3-1,7					510 <b>-</b> 570	6,4-6,6 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	Rotational- speed limitat		uel delivery naractenstics	Starting t	uel delivery 5	<b>49</b> ld!	e stop Control rod
rev/min 1	cm /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm /1000 strokes 7	rev/min 8	travel mm 9
1150	54,0-55,0 (52,5-56,5)	1190-1200*	500 800	61,5-63,5 (59,5-65,5) 56,5-58,5 (54,5-60,5)	100	19,0-21,0 mm RW	-	-

Checking values in brackets

12.85

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<sup>\* 1</sup> mm less control rod travel than cot 2

40

WPP 001/4 HAN 10,8 h 1

1. Edition

PE 6 A 95 D 320 RS 2557 Komb.-Nr. 0 400 676 186 RSV 400-1100 A8C 1117-1 R

company Hanomag

<sub>ngine</sub> D 963 N 110 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 (2,10-2,30)

mm (from BDC)

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (forque-control valve)
mm (2)	cm1/100 strokes	cm·/ 100 strokes	mm	cm:/100 strokes	mm
2	3	4	2	3	6
9,9-10,0	8,2-8,4	0,35(0,6)			
8,0-8,2	3,1-3,9	0,35(0,55)			
					į į
	mm 2 9,9-10,0	mm 2 cm /100 strokes 3 9,9-10,0 8,2-8,4	travel mm 2 cm 1/100 strokes 2 cm 1/100 strokes 4 cm 1/100 strokes 4 9,9-10,0 8,2-8,4 0,35(0,6)	travel	travel

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	crated speed Control rod travel mm		Interme	ediate rate	d speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	(3) for rev/min	rque control  Control rod  travel  mm   11
loose	800 x =	0,3-0,7 3,75	-	-	-	ca. 21		7,6 min. 19,5	1100 500 865	9,9-10,0 10,7-10,8 10,3-10,5
ca. 49	8,9 4,0 1365	1140-1150 1200-1230 0,3-1,4					400 570-630	8,0-8,2 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	6 Rotational speed limitat	speed limitat Sa characteristics			luel delivery 5	4a) tdle stop		
	emp 40° C (104° F) cm·/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm*/1000 strokes 5	rev/min	cm·/1000 strokes	rev/min 8	Control root travel mm	
100	82,0-84,0 (80,0-86,0)	1140-1150*	400	31,0-39,0 (28,5-41,5)		122,0-132, 119,0-135,		-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

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WFP 001/4 MB 3.8 n 12

1. Edition

PES 4 A 90 D 410 RS 2570

ROV 300-1400 AB 1146-3 L

supersedes-

company:Daimler-Benz OM 314 A

Komb.-Nr. 9 400 085 230

81,0 kW

All test specifications are valid for Bosch-Fuel Injection Pump Test Benches and Testers Port closing at prestroke

A. Fuel Injection Pump Settings

(1.95-2.15)mm (from BDC)

RW = 9.0 - 12.0 mm

		1,33-6,137				
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,8+0,1	8,0-8,1	0,3(0.5)			
300	8,9-9,1	1,3-1,7	0,25(0,45	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	aed	Lower rated	speed	•	Sliding	ileeve travel
	rev/min Control rod travel mm 2	mm		Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	1
max.	1400	15,2-17,	8	•	-	-	ca. 16	100 300	min.10,5 8,9-9,1		1,2-1,4 3,3-3,6
ca. 64	11,8 4,0 1800	1585-16	15				400-470	740-8	300= 2,0		5,4-5,7 8,6
							<b>3a</b>				

Torque control travel a = 1,0

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten rev/min		Rotational-speed 2b fimitation intermediate speed rev/min 4a	high idle s	very characteristics 5a speed 5b cm³/1000 strokes	ldie switchii rev/min	ng point	Torque- travel	Control 5 Control rod travel
LDA 1400	0,5 bar 80,0-81,0 (78,0-83,0)	1440-1450*	LDA 500 LDA 500	0,5 bar 74,0-76,0 (72,0-78.0) 0 bar 56,5-58,5 (54,5-60,5)	100	73,0-83,0 (70,0-86,0)	1400 500 1050 1225	13,5+0,

Checking values in brackets

1 mm less control rod travel than col. 2



### D. Adjustment Test for Manifold Pressure Compensator

MB 3,8 n 12

-2-

Testatn -

500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES 4 ARS 2570 + AB 1146-3 L	0,5	0 0,33 0,23	13,8-13,9 12,1-12,2 13,4-13,5 12,4-12,7

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 DAF 8,3 n 5 1. Edition

En

PE 6 A 95 D 410 RS 2575

RSV 250-1200 A 5 C 2198-1 L

supersedes= company DAF DH 825

Komb.-Nr. 0 400 676 1/5

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,0-2,1(1.95-2.15)

mm (from BDC) RW = 7,5 - 10,5 mm

Rotational speed rev/min 1	Control rod travel 2	Fuel delivery cm '/100 strokes 3	Oifference cm <sup>-1</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm·/100 strokes 3	Spring pre tensioning (torque-control valve) mm
1200	10,4+0,1	7,3 - 7,5	0,35(0,6)			
250	6,0-6,2	0,7 - 1,1	0,35(0,55)			
						·

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	tiale rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed   Control rod   travel   mm   9	I(	rque control  Control rod travel  mm
loose	000 X =	0,3-0,7 5,0				ca.24	250 100	5,6 min.19,5	1200 500	10,4-10,5 11,2-11,3
ca.58	9,4 4,0 1505	1240-1250 1340-1370 0,3-1,4					250 635 -	6,0 - 6,2 695 = 2,0	800 940	11,1-11,2 10,7-11,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Fu	ill-load stop	6 Rotational- speed limitat		uel delivery paracteristics	Starting Idle	luel delivery 5			
Test oil to	cm <sup>y</sup> 1000 strokes	Note changed to ) rev/min	revimin	cmV1000 strokes	rev/min	cm //1000 strokes	rev/min 8	Control rod travel mm	
1200	73,0 - 75,0 (71,0 - 77,0)	1240-1250*	800	74,5 - 77,5 (72,0 - 80,0)	100	135,0-145, 132,0-148,			

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

WPP 001/4 MB 5.7 v 15

1. Edition

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PES 6 A 90 D 410 RS 2596 Komb.-Nr. 9 400 085 229 RQV 300-1400 AB 1146-2 L

company: Daimler-Benz OM 352 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1400	12,8+0,1	8,1-8,2	0,3(0,5)			
300	8,9-9,1	1,3-1,7	0,25(0,45			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
deflection		Control rod (travel	•	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
	rod travel mm	rev/min (	29		rev/min	mm 4	lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1400	15,2-17,	8	-	-	-	ca. 16	100 300	min.10,5 8,9-9,1		1,2-1,4 3,3-3,6
ca. 64	11,8 4,0 1800	1585-161	5					ł .	300=2,0		5,4-5,7 8,6
							<b>3</b> a				

Torque control travel a = 1,0 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	d stop	Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics 5e speed 50	Starting Idle switching		Torque- travel	control (5)
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	⊭ev/min	cm³/1000 strokes	rev/min	travei mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,5 bar 81,0-82,0 (79,0-84,0)	1440-1450*	LDA 500 LDA 500	0,5 bar 76,5-78,5 (73,5-79,5) 0 bar 62,0-64,0 (60,0-66,0)	100	73,0-83,0 (70,0-86,0) =14,8-15,2 mm RW	500 1050	12,8+0, 13,8+0, 13,5+0, 12,9+0,

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

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# D. Adjustment Test for Manifold Pressure Compensator

MB 5,7 v 15

-2-

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 ARS 2596 +RQVAB 1146-2 L	0,50	0 0,33 0,23	13,8-13,9 12,5-12,6 13,5-13,6 12,5-12,8

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

**F6** 

40

WPP 001/4 MB 5,7 v 14 1. Edition

En

PES 6 A 90 D 410 RS 2596 Komb.-Nr. 0 400 876 310 RSV 350-1200 AOC 1148 L

supersedes\_

company Daimler-Benz engine OM 352 A 110 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump, Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDC) RW 9,0-12,0 mm

Rotational speed	Control rod travel 5	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm /100 strokes	cm <sup>1</sup> / 100 strokes	mm .	cm <sup>-</sup> /100 strokes	mm
1	2	3	4	2	3	6
1180	12,2+0,1	7,4-7,5	0,3(0,45)			
350	8,6-8,7	1,2-1,6	0,2(0,4)			
			İ			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

16 1 1	deflection travel mm rev/min			diate rated	speed	Control- tever deflection in degrees	= -	raled speed Control rod travel mm	3 to	rque controt Controt rod travel mm
loose	800 x = 5,	0,3-1,0	-	-	-	lose	350 100 350	8,6 min. 19,0 8,6-8,7	725	12,2+0,1 13,5+0,1 12,9+0,2
ca. 62	11,2 4,0 1460	1220-1230 1335-1365 0,3-1,7					510-570	= 2,0	300	12,310,2

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> ft	ill-toad stop	6 Rotational speed limitat	33 F	uel delivery naracteristics	Starting f	uel delivery 5	4a Idle stop	
Test oil to rev/min 1	emp 40 C (104 F) cm*/1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm·/1000 strokes 5	rev/min	cm·/1000 strokes 7	rev/min 8	Control rod travel mm
LDA 1200	0,9 bar 74,0-75,0 (72,0-77,0)	1220-1230*	LDA 900	0,9 bar 74,0-78,0 (71,5-80,5)		78,0-88,0 (75,0-91,0 16,0-16,4 mm RW		-
LDA 725	0,9 bar 79,0-81,0 (76,5-83,5)		LDA 500	0 bar 51,0-53,0 (49,0-55,0)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.85

**BOSCH** 

### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS2596 withAOC1148 L	0,90	0 0,45 0.24	13,5-13,6 11,5-11,6 12,6-12,7 12,0-12,2

Notes:

Testoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at Unlocking at

0,75 - 0,85 bar 0,25 - 0,35 bar

Testoil-ISO 4113

WPP 001/4 MB 5.7 v 13

# Test Specifications Fuel Injection Pumps ① and Governors

1. Edition

En

PES 6 A 90 D 410 RS 2596 Komb.-Nr. 9 400 085 222 ROV 300-1400 AB 1196 L

supersedes \_

company: Daimler-Benz engine OM 352 A 124 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

95-2-15) mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,0+0,1	7,8 - 7,9	0,3 (0,5)			
300	9,4-9,6	1,3 - 1,7	0,25(0,45	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed		Lowe	r rated	speed	•		Sliding sleeve travel			
deflection	rev/min Control	Control rod travel	<b>(a)</b>	Degree of deflection			flection t		Control rod Degree deflection of control		ction		Control rod travel			0
	rod travel mm	rev/min	29	of control lever	rev/min	mm	•	lever	WOI	rev/min	mm	3	rev/min	mm		
1	2	3		4	5	6		7		8	9		10	11		
max.	1500	15,2-17	,8	-	-		-	ca.	30		min.1	-		0,9-1,3		
ca. 63	11 /	1440-14	50					ļ			19,4-9 -670=2	-		2,4-2,6 4,3-4,5		
Ca. 03	4.0							ŀ		י טוט	•0/0=2	.,0		5.7-5.9		
	1750												1500	8,6		
			-				- -	39								

Torque control travel a = 1,1 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

	d stop np 40°C (104°F) 2	limitation intermediate speed	(3)		idie switchi	ng point	Torque-control 5 travel Control rod travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	5	6	cm <sup>3</sup> /1000 strokes	rev/min 8	9
LUA 1400 LUA 900	0,7 bar 71,5-72,5 (69,5-74,5) 0,7 bar 72,0-74,0 (69,5-76,5)	1440-1450*	LDA 600 LDA 500	0,7 bar 71,0-73,0 (68,5-75,5) 0,7 bar 56,0-57,0 (54,0-59,0)	100	73,0 - 83,0 =15,6- 16,0 mm RW	1400 600 900	12,412,5 13,8-13,5 13,3-13,5 12,8-13,1

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung C by Robert Bosch GmbH, D-7 Stuttgert 1, Postfach 50 Printed in the Federal Republic of Germany Imprime en Republique Féderale d'Allemagne par Robert Bosch GmbH.

### D. Adjustment Test for Manifold Pressure Compensator MB 5.7 v 13

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES 6 ARS 2596 +RUV AB 1196 L	0,7	0 0,3 0,24	13,8 - 13,9 12,6 - 12,7 13,5 - 13,6 12,8 - 13,0
			·

Notes

(1) when n =

rev/min and gauge pressure =

bar ( - maximum full-load control rod travel)

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1

and Governors

WPP 001/4 KHD 12,7 p 2

1. Edition

PE 8 A 95 U410 LS 2608

ROV 300-1250 AB 1195 L

supersedes \_

Komb.-Nr. 0 400 648 141

company. KHD

F 8 L 413 F

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je  $45^{\circ} + 0.5^{\circ} + 0.75^{\circ}$ 

188 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

mm (from BDC)

POR Closing at pres	,u	<u>(1.95-2.15)                                    </u>	111117 (11 0111 00 07		· · · · · · · · · · · · · · · · · · ·	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Centrol rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,4+0,1	9,2 - 9,4	0,35(0,6)			
300	6,4-6,6	0,8 - 1,4	0,35(0,55			

Adjust the fuel delivery from each outlet according to the values in I

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	<b>6</b>	Lower rated	speed	•	Sliding sleeve travel		
deflection		Control rod travel	<b>①</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		$\odot$	
	rod travel	um tev/min	<b>29</b>	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm .	
1	2	3		4	5	6	7	8	9	10	11	
max.	1280	15,2-17	,8	-	-	-	ca. 15	100	min. 8,1	300	1,2-1,3	
							Ì	300	6,5-6,7		2,6-2,9	
ca. 46	9,4	1290-13	00				į	ľ			5,4-5,6	
1	4,5	1365-13	95				300-450				7,7-7,8	
1	1500	0,3-1,	0				1_			1380	8,7	
							<b>3</b>					

Torque control travel a = 0.45

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)  rev/min   cm³/1000 strokes		Rotational-speed (2b) limitation intermediate speed rev/min (4a)	(3)		idie switchin	$\mathbf{O}$	Torque-control (5 travel Control ro travel rev/min mm	
1250	91,5-93,5 (89,5-95,5)	3 1290-1300 *	750	93,0-96,0 (90,5-98,5)	100	116,5-126,5 (113,5-129,5	500 845	9 10,4+0,1 10,8+0,1 10,6+0,2 10,4+0,2

Checking values in brackets

\* 1 mm less control rad travel than col 2

9.85

WPP 001/4 VAL 3.3 a 1

2. Edition

PES 3 A 95 D 320 RS 2655 Komb.-Nr. 0 400 873 032 1-2-3 je 120° - 0,5° (- 0,75°)

RSV 325-1150 A 2 C 2178-1 R

Valmet J11 D 56

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing difference between control-rod

travel 9 mm and max. 4,5-5,5°

camshaft

Port closing at prestroke (2.45-2.65)

mm (from BDC) RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (forque-control valve)
rev/min	mm (2)	cm 1/100 strokes	cm <sup>-1</sup> / 100 strokes	mm	cm <sup>-/</sup> 100 strokes	mm
1	2	3	4	2	3	6
1130	10,4+0,1	8,9-9,1	0,35(0,6)			
325	6,5-6,7	2,2-2,8	0,35(0,55)			
		Į				
		1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed		Interme	diale rate	d speed	(1)	Lower	rated speed	3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rad travel mm 9	rev/min	Control rod travel mm	
loose	800	0,3-0,7	•	-	-	ca. 27	325	6,1	1130	10,4-10,5	
	x =	5,0					325	6,5-6,7	500 915	11,8-11,9 11,2-11,4	
ca. 54	9,4 4,0 1405	1170-1180 1235-1265 0,3-1,4					470-530	= 2,0			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	uli load stop	6 Rotational speed limitat	11361	iel delivery paracteristics	Starting l	uel delivery 5	4a Idle stop	
Test oil t res/min 1	emp 40°C (104 F) cm*/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm/1000 strakes 5	rev/min 6	cm <sup>-/</sup> 1000 strokes 7	rev/min 8	Control root travel mm
11:30	88,5-90,5 (86,5-92,5)	1170-1190*	500	94,5-96,5 (92,0-99,0)	100 325	190,0-200 (187,0-203 =19,5-21,0 mm RW 22,0-28,0 (19,5-30,5	(0) )	-

Chesking values in brackets

\* 1 mm less control rod travel than col. 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MWM 3,1 b 3. Edition

PES 3 A 90 D 320/3 RS 2658 Komb.-Nr. 0 400 863 008

RSV 325-1500 A2B 505-2 R A2C 505-2 R supersede 5.84 MWM D 226 B-3

1 - 2 - 3 je 120°  $\pm$  0,5° ( $\pm$  0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2,90-3,10)

mm (from BDC) RW = 9,0

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mrn <b>2</b>	cm/109 strokes 3	cm <sup>-/</sup> 100 strokes 4	mm 2	cm/100 strokes 3	mm 6
1500	11,2+0,1	9,0-9,1	0,3(0,45)			
325	7,0-7,2	0,8-1,4	0,25(0,45	)		
Port clo	sing differod travel	rence = 3,5-4 12 mm	5 mm bet	een contro	1-rod travel 9	mm and

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	rated speed	rev/min Control rod	Interm	ediate rate	speed	<b>(4)</b>	Lowe	r rated speed	<b>3</b> to	rque control
Degree of deflection of control	travel mm	travel				Control- lever deflection	rev/min	travel	rev/min	travel
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca.24	325	6,6	-	-
	x =	4,75					100	min.19,5		ł
ca .63	9,5 4,0 1780	1540-1550 1615-1645 0,3-1,4					325 465 -	7,0 <b>-7</b> ,2 525=2,0		·

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp=40°C (104°F)	Rotational speed limitat		rel delivery aracteristics	Starting fi Idle	luel delivery 5	(4a) Idi	e stop Control rod
rev/min 1	cm <sup>3</sup> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm/1000 strokes 7	rev/min 8	travel mm 9
1500	89,5-90,5 (87,5 <b>-</b> 92,5)	1540-1550*	-	-	100	131,0-141, 128,0-144, = 19,5- 21,0 mm RW	D)	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

40

WPP 001/4 MWM 6,2 e 3. Edition

En

PES 6 A 90 D 320/3 RS 2660

RSV 325-1500 A 2 B 505 - 2 R A 2 C 505 - 2R supersedes 5 • 84 company MiM

Komb.-Nr. 0 400 866 112

engine D 226-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(2,90-3,10)

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery cm //100 strokes 3	Difference cm <sup>-//</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> 100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1500	11,2+0,1	9,0 - 9,1	0,3 (0,5)			
325	7,0-7,2	0,8 - 1,4	0,25(0,45			
						1

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	Control rod travel mm	rev/min Control rod travel mm rev/min	Interme	diate rated	speed	Control- lever deflection in degrees		rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800 x =	0,3-1,0 4,75	-	-	ــــــــــــــــــــــــــــــــــــــ	ca. 24	325 100	6,6 min.19,5	-	-
ca. 63	9,5 4,0 1780	1540-1550 1615-1645 0,3-1,					325 46 <b>5 -</b>	7,0-7,2 525-2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Ft	ill-load stop	6 Rotational- speed limitat		iel delivery iaracteristics	Starting f	uel delivery 5	<b>43</b> ld	e stop
Test oil to rev/min 1	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm v1000 strakes 7	rev/min	Control rod travel mm 9
1500	89,5 - 90,5 (87,5 - 92,5)	1540-1550*	•	<b>-</b>	-	-	•	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.85

40

WPP 001/4 MWM 6,2 e 3 2. Edition

En

PES 6 A 90 D 320/3 RS 2660

Komb.-Nr. 0 400 866 114

RSV 325-1200 AOC 2182-1R

1131 323 121

company MWM TD 226 B-6

All test specifications are valid for Bosch Fuel Injection Punip Test Benches and Testers

#### A. Fuel Injection, Բարդր Settings

Port closing at prestroke

Testolitics and

(2.90-3.10)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1200	12,0+0,1	9,9-10,0	0,3(0,45)			
325	6,9-7,1	0,8-1,4	0,25(0,4)			
			l			
	ļ	ļ		1		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control	r rated speed Control rod travel	d rev/min Controt rod travet mm rev/min	Interm	ediate rat	ed speed	Control- tever deflection	Lower	rated speed Control rod travel mm	IL 9 /	rque control Control rod travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-0,7				ca.18	325	6,5	1200	12,0-12,1
		3,25	ŀ				100	min.19,5	500 1125	12,5-12,6
ca.45	11,0 4.0 1465	1240-1250 1300-1330 0,3-1,4					325 495 <b>-</b> 55	6,9-7,1	1127	12,3-12,5

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ilf-foad stop emp_40°C (104°F)	Rotational- speed limitat		iel delivery paracteristics	Starting I	uel delivery 5	<b>49</b> 'd'	e stop   Control rad
rev/min	cm <sup>1</sup> /1000 strokes	changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm/1000 strokes 7	rev/min 8	travet mm 9
LDA 1200	0,7 bar 99,0-100,0 (97,0-102,0)	1240-1250*	LDA 500	0 bar 62,0-63,0 (60,0-65,0)	100	135,0-145, (132,0-148 =19,5- 21,0 mm RW		-

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.85

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Sluttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

### D. Adjustment Test for Manifold Pressure Compensator

MWM 6,2 e 3

Test at n -

 $500 \quad \ \ \, \text{rev/min} \ \, \text{decreasing} \ \, \text{pressure - in bar gauge pressure}$ 

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6ARS2660	0,70		12,5-12,6
+RSVA0C2182-1R		0 0,46 0,21	10,2-10,3 12,0-12,1 10,8-11,0

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

40

WPP 001/4 LIE 5,6 a

2. Edition

En

PES 4 A 95 D 410 RS 2685

Komb.-Nr. 0 400 874 238

RSV 400-1000 A 1 C 2187 L

supersedes 8.84 company Liebherr

engine

D 904 NA 70 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,7-2,8 (2,65-2,85)

mm (from BDC)

	•-	, , ,				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm //100 strokes	mm
1	2	3	4	2	3	6
1000	9,7-9,8	7,9-8,1	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	er rated speed		Interm	ediate rate	d speed	Lower rated speed			3 Torque control	
Degree of deflection	travel	Control rod travel				Control- lever		Control rod travel	İ	Control rod travel
of control lever	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min 8	9	rev/min 10	11
loose	800	0,3-0,7	-	_	-	ca. 23	400	5,7	1000	9,7-9,8
	x =	2,5						min.19,5	550 430	9,7-9,9
ca. 50	4,0	1040-1050 1065-1095 0,3-1,4					400 455 <b>-</b> 5	6,1-6,3 515-2,0	430	10,9-11,5

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> <sup>F(</sup>	ill-load stop	6 Rotational- speed timitat		uel delivery paracteristics	Starting f	luel delivery 5	4a Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>1/</sup> 1000 strokes 2	Note changed to 3 rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1000	79,0-81,0 (77,0-83,0)	1040-1050*	600	69,0 <b>-</b> 72,0 (66,5-74,5)	100	120.0-130 (117,0-133 = 19,5-21, mm RW	(0 - (0)	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst: Kfz-Ausrustung c. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

(A)

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WPP 001/4 LIE 8,4 a

2. Edition

En

PES 6 A 95 D 410 RS 2689 RSV 400-1000 A 1 C 2187 L Komb.-Nr. 0 400 876 322

supersedr 8.84 Liebherr company engine D 906 NA 150 kii

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,7-2,8

Port closing at prestroke (2,65-2,85)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque control valve)
rev/min	mm 2	cm /100 strokes	cm <sup>-/</sup> 100 strokes 4	mm 2	cm·/100 strokes	mm 6
1000	9,7-9,8	8,1-8,3	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			
:						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Intermo	ediate rated	speed	<b>(4)</b>	Lower	rated speed	(3) to	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min	Control rod travel mm
loose	800	0,3-0,7		-	-	ca.23	400	5,7	1000	9,7-9,8
	x =	2,5					100	min.19,5	550 430	9,7-9,9 10,9-11,5
ca. 50	8,7 4,0 1230	1040-1050 1065-1095 0,3-1,4					455 <b>-</b> 5	6,1-6,3 5 = 2,0	750	10,5-11,5

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

load stop	6 Rotational- speed limitat		uel delivery haracteristics	Starting tidle	fuel delivery 5	4a Idle stop	
mp 40°C (104°F) cm//1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm v1000 strokes	rev/min 6	cm /1000 strokes 7	rev/min 8 <sub>.</sub>	Control rad travel mm
81,0-83,0 (79,0-85,0)	1040-1050*	600	70,0-73,0 (67,5-75,5)	100 400	(117,0-133	0)	-
7	np 40°C (104°F) cm /1000 strokes 2 81,0-83,0	speed limitat Note changed to ) rev/min 3  81,0-83,0  1040-1050*	speed limitat Note changed to ) rev/min 3	speed limitat   Characteristics   Note   Changed to   rev/min   rev/min   cm <sup>1</sup> /1000 strokes   3   4   5	Note   Changed to   rev/min   Cm 1/1000 strokes   rev/min   6	Note   Changed to   rev/min   cm /1000 strokes	Note   Changed to

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

40

WPP 001/4 DAF 6,2 o 3

1. Edition

En

PES 6 A 95 D 320 RS 2693 Komb.-Nr. O 400 876 327

RSV 300-1300 AOC 2195 R

supersedes DAF company DNT 620 engine 130,0 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15) mm (from BDC); RW = 7,5 - 10,5 mm; cyl. 1;

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes 3	cm <sup>-/</sup> 100 strokes 4	mm 2	cm <sup>-/</sup> 100 strokes 3	mm 6
850	11,5+0,1	7,6-7,8	0,35(0,45)			
300	6,1-6,3	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed		Intermed	liate rated	speed	(4)		rated speed	1 3	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min	Control rod travel mm
loose	800	0,3-0,7	-	-	-	ca. 25	300	5,7	1290	11,0-11,1
	x =	5,0					100	min.19,5	500 1015	11,6-11,7 11,3-11,5
ca. 55	10,0 4,0 1570	1330-1340 1410-1440 0,3-1,4					300 560-620	6,1-6,3 =2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fi	ili load stop	6 Rotational- speed limitat	39 F.	uel delivery paracteristics	Starting f	uel delivery 5	(4a) Idi		
1	emp 40°C (104°F) cm <sup>-/</sup> /1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm/1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 850	0,7 bar 76,0-78,0 (74,0-80,0)		LUA 1290	0,7 bar ,75,5,78,5 (73,0-81,0)	100	130,0-140 (127,0-143		-	
		4	LDA 600	0 bar 65,0-67,0 (63,0-69,0)	300	7,0-11,0 (4,5-13,5)			

Checking values in brackets

# 1 mm less control rod travel than col 2

10.85

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

DAF 6,2 o 3

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

600

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution , difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS 2693 with AOC 2195 R	0,7	0 0,25	11,5-11,6 11,2-11,4 11,4-11,5

Testoil-ISO 4113

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

40

WPP 001/4 MB 6,0 c 1 1. Edition

En

PES 6 A 90 D 410 RS 2710 Komb.-Nr. 0 400 876 334

Port closing at prestroke

RSV 350-750 A O C 2006-3 L

supersedes company

Daimler-Benz

engime

01! 366 54,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### **A. Fuel Injection Pump Settings**

2,25-2,35

(2,20-2,40)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning trorque-control valver
rev/min	mm <b>(2)</b>	cm1/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm //100 strokes	mm
1	2	3	4	2	3	6
700	11,4+0,1	5,4 - 5,5	0,3 (0,45)			
350	8,2-8,4	0,6 - 1,2	0,25(0,45)			
			1			

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

	r rated speed		Intermediate rated speed			4 Control	Lower	rated speed  Control rud	3 forque control   Control rod		
Degree of deflection	travel	travel		ļ		lever deflection	rev/min	travel mm	rev/min	trävel mm	
of control lever 1	mm 2	mm rev/min	4	5	6	in degrees	8	9	10	11	
loose	800	0,3-1,0	•	-	_	ca. 20	350	8,3	-	_	
	x =						100	min.19,5			
ca.32	10.4	/50-755					350	8,2-8,4			
28	4,0 900	775-788 0,3-1,4					380 -	420=2,0**			

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel,

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull load stop emp 40 C (104°F)	Note		iel delivery aracteristics	Starting f	uel delivery 5	(da) (die stop   Control rod   travel	
rev/min	cm <sup>-/</sup> 1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm*/1000 strokes 5	rev/min 6	cm/1000 strokes 7	rev/min 8	mm 9
700	53,5 - 54,5 (51,5 - 56,5)	750-755 *	-	-	100	<i>7</i> 8,0-88,0 (75,0-91,0)	•	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

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WPP 001/4 DEE 7,6 d 2. Edition

US-PES 6 A 100 D 410 RS 3036

Komb.-Nr. 9 400 230 020

US-RSV 600-1100 A 2 B 2079L supersedes 9.83

company engine

John Deere 6466 T 132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Set ings

Port closing at prestroke

Testoil-ISO 4113

1,95-2,05 (1,90-2,10)

mm (from BDC)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	Control rod travel mm	rev/min  Control rod  travel  mm rev/min  3	Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/mm	rated speed Control rod travel mm	3 To	rque control   Control rod   travel   mm
loose	800	0,3-1,0		-	-	ca. 22	600 100	4,7 min.19,0	1100 750	10,8-10,9 11,6-11,7
ca .42	9,8 4,0 1285	1145-1155 1185-1215 0,3-1,7					600 630-690 800	5,1-5,3 = 2,0 max. 1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rolational- speed limital Ga Fuel delivery characteristics			Starting t	fuel delivery 5	(4a) Idle stop	
Test oil to rev/min 1	temp 40°C (104°F) Note changed to )		rev/min	cm <sup>1</sup> /1000 strokes	rev/min	rev/min cm <sup>-/</sup> /1000 strokes 6 7		Control rod travel mm
LDA 1100	0.8 bar 109,0-111,0 (105,0-114,0)	1145-1155*	LDA 750 LDA 500	0,8 bar 116,5-119,5 (115,0-121,0) 0 bar 68,5-71,5 (65,0-73,0)	100 High 1200	170,0-195 idle speed 19,0-29,0		-

Checking values in brackets

10.85

<sup>\* 1</sup> mm less control rod travel than col 2

### D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 d

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
US-PES6ARS3036	0,43		11,5 - 11,6
+ US-RSVA2B2079L		0,19	9,8 - 10,2

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

F23

40

WPP 001/4 PEN 6, 1k

1. Edition

En

PES 6 MW 100/320 RS 1132 RSV 325-1250 MW 2 A 308-3 0 403 476 042 supersedes Volvo Penta companyTD 61 APP engine 147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

(2,85-3,05)

mm (from BDC) RW = 9 - 12 mm

Rotational speed rev/min t	Control rod travel	Fuel delivery cm·/100 strakes 3	Oifference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> 100 strokes 3	Spring pre tensioning storque control valves mm
1000	10,8-10,9	8,5-8,7	0,35(0,6)			
325	6,1-6,2	1,2-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

1 Uppe	( ) opposition operation			ediate rati	ed speed	4	Lower	Torque control    Control rod		
Degree of deflection of control	Control rod travel mm	travel mm rev/min				Control- lever deflection	rev/min	Control rod travel	rev/min	travel
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0				ca. 24	325	6,1-6,2		
							100	min.19,0		
ca. 54		1300=9,8 1370=4,0								
29		0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop Test oil temp 40 °C (104 °F)		Note changed to )		Fuel delivery characteristics		Starting fuel delivery 5		e stop Control rod travel
rev/min	cm /1000 strokes	rev/min	rev/min	cm <sup>-/</sup> 1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	ww
1	2	3	4	5	6	7	8	9
1000	85,0-87,0 (83,0-89,0)				100	140-160 (137-163)		
					325	12,0-16,0 (9,5-18,	5)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 MB 2,4 1 1

3. Edition

En

00

PES 4 M 55 C 320 RS 107-1 RSF 375/2250 M 18

Komb.-Nr. 0 400 074 961

Sales model 0 400 074 958

supersedes 1.85

company Daimler-Benz engine OM 616

engine UM 616 53 kW (72) PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1 - 3 - 4 - 2 0 - 90-180-270

> 2,20-2,30 (2,15-2,35)

mm (from BDC)

20 mm

Control rod travel

	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	13,4 <sup>+0,1</sup>	3,9-4,0	0,25(0,30)			
375 1800 2200	6,0-6,2	0,6-0,7	0,1 (0,15) 0,25(0,3) 0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated sp	eed		Upper rated sp	eed		Variations in co	ntrol red trav	/el
Degree of deflection of control	effection travel f control		Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
2	nin.11,0 nax.10,5 6,0-6,2 4,8 <b>-</b> 5,0	300 375	50 7 8 9	0-1,	5 2500 -	12 13 14	100 1800 1000	min. 20,1 12,8-13,0 13,4-13,5
(§)	2,0	720-820	0	1		6	Switching p	oint

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load de	elivery (19)	Full-load speed 8a	Variations delivery	in fuel 17	Starting fi	uel delivery	
Test oil ten	np 40°C (104°F)			J (B)			Difference
rev≕an	cm³/1000 strokes	rev/min	rev/min	cm 1/1000 strokes	rev/min	cm³/1000 strokes	cm 1/1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,2-8,6	1800 1000	39,0-41,0 (38,0-42,0) 39,0-40,0 (38,0-41,0)	100 375 2500	min. 53,0 6,0-7,0 (5,5-9,0) 23,0-27,0 (22,0-28,0)	1,0 1,5 2,5 See 3,0 Point 8 a (6)

Checking values in brackets

\*ca. 4,2 less control rod travel than in Column 2

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- 1. \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,7-5,1) mm.
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.4 1.5 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 47°. No change in control-rod travel after switching point up to 550 min-1.
  Control-lever position 30°. Rotational-speed range 350 min-1.
- Testing the pneumatic shutoff box
  Control lever against idle stop.
  At n = 375 min<sup>-1</sup> and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

#### (5)

## Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 3,0 o 2

4. Edition

-

PES 5 M 55 C 320 RS 108-1 RSF 350/2300 M 16

Komb.-Nr. 0 400 075 987 Sales model 0 400 075 988

supersedes 1.85
company Daimler-Benz
OM 617
65 kW (88 PS)
Sweden version

1 - 2 - 4 - 5 - 3 $0 - 72-144-216-288 \pm 0.50 (0.75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30 (2,15-2,35)

mm (from BDC)

Control rod travel

18,5-21,5

En

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning icompensating valver
rev/min	mm	cm <sup>1</sup> /100 strokes	cm 1/100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
1000	13,4 <sup>+0</sup> ,1	3,9-4,0	0,25(0.3)			
350 1800 2200	6,0-6,2	0,6-0,7	0,1 (0,15) 0,25(0,3) 0,25(0,3)			

Set uniform delivery according to the values in [\_\_\_\_\_\_]

Checking values in brackets

#### **B.** Governor Settings

Lower rat	ted sp	eed		Upper rat	ed sp	eed		Variations	ın ço	ntrol rod trav	ret
Degree o dellection of contro	effection travel control		Degree of deflection of control			Rotational speed	ational speed			Control rod frave	
lever		mm	rev/min	lever		luus	rev/min			ter min	mm
1		2	3	4		5	6	7		8	9
9-13		min.10, max. 9, 6,0-6,2 4,6-4,8	300 350	50	789	12.5-12 8,6-9,6 -	7		(12) (13) (14)	100 1800 1000	min. 20,1 13,0-13,2 13,4-13,5
	(4) (5)	2,0	780-820		(i) (i)	i	2950		6	Switching p	cont

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full load d	elivery (19)	Full load speed 8a	Variations delivery	in fuel (17)	Starting f	uel delivery	
Test oil ter	np 40 C (104 F)	- Common		j (18)			Difference
rev/min	cm²/1000 strokes	rev/min	rev/min	cm 1/1000 strokes	rev:min	cm1/1000 strokes	cm /1000 strakes
1	2	3	4	5	6	7	В
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,6-9,0	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0 1,5 (15)
				,07	2500	23,0-27,0	: 7.5 5 2 2
						(22,0-28,0)	3,0 Point 8 a 16

Checking values in brackets

\*ca. 4.0 less control rod travel than in Column 2

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- 1. \*\* Checking the idle speed auxiliary spring setting at n = 450 rpm, control rod travel (4,5-4.9 mm).
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.4 1.5 mm.
- Testing the idle-speed auxiliary spring shutoff
   Control-lever position 47°. No change in control-rod travel after switching point up to 550 min<sup>-1</sup>.
   Control-lever position 30°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- Testing the pneumatic shutoff box

  Control lever against idle stop.

  At n = 375 min<sup>-1</sup> and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

# **Test Specifications Fuel Injection Pumps** and Governors

En

WPP 001/4 MB 3,0 "

1. Edition

supersedes\_

company Daimler Benz OM 603

80 kW

1-5-3-6-2-4 0-60-120-180-240-300

PES 6 M 55 C 320 RS 156

RSF 315/2300 M 59-3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

0 400 076 994

2,00-2,10 (1.95-2.15) mm (from BDC)

20-22

Note: Before starting testing, observe the Control rod travel important instructions on the reverse.

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
mm	cm <sup>1</sup> /100 strokes	cm 1/100 strokes	mm	cm <sup>4</sup> /100 strokes	mm
2	3	4	2	3	6
11,3+0,1	3,15-3,25	0,25(0,3)			
5,4-5,6	0,55-0,65	0,1(0,15)			
	İ				
	travel mm 2 11,3+0,1	travel cm <sup>1</sup> /100 strokes 2 3 11,3+0,1 3,15-3,25	travel mm cm <sup>1</sup> /100 strokes 2 3 cm <sup>1</sup> /100 strokes 4 11,3+0,1 3,15-3,25 0,25(0,3)	travel   travel   travel   travel   mm   cm '/100 strokes   cm '/100 strokes   2   11,3+0,1   3,15-3,25   0,25(0,3)	travel   travel   travel   mm   cm '/100 strokes   cm '/100 strokes   2   3   11,3+0,1   3,15-3,25   0,25(0,3)

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

Lower rated sp	eed		Upper rated	spéed		Variations in co	ntrol rod trav	rel
Degree of deflection	flection travel		Degree of deflection travel Rotational speed				Rotational speed	Control rod travel
of control lever	mm	rev/min	of control lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
13-17 ①	min.7,0	220	50 (	<b>210,6-10</b> ,	8 2200	12	100	min. 20,1
	5,4-5,6	290		<b>87,8-8,2</b>	2500		1800	10,9-11,1
(3)	4,2-4,4	360**		9  <del>-</del> _		(14)	1000	11,3-11,4
(4)	-			<b>5</b> 0-1,0	2950	İ	Switching p	   nint
(5)	1,5	620-720		<u>آآ</u>		6	Jancining p	Q
	1	l			<u></u>	<u> </u>	<u> </u>	

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full load o	delivery (19)	Full-load speed 8a	Variations delivery	ın fuel 17	Starting I	uel delivery	
Test oil te	mp 40°C (104°F)			(18)			Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	ten/wiu	cm <sup>1</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	33,5-35,5 (32,5-36,5)	2500*	1800 1000	34,0-35,5 (33,0-36,5) 31,5-32,5	100 290	min. 55 5,5-6,5 (5,0-9,5)	6,0 (2a) 1,0 (1,5)
						22,0-26,0 21,0-27,0)	2,5 See (3,0) Points 8 a

Checking values in brackets

\*ca. 2,6 less control rod travel than in Column 2

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11.85

- 1. \*\* Supplementary idle spring inspection, setting at n = 360 1/min control-rod travel (4.1-4.5 mm).
- 2. Set idle control-lever position:

At 1000 1/min. control-rod travel 0.9-1.0 mm.

3. Check supplementary idle spring cutoff

Control-lever position 49°, after switch-over point (of starting curve) up to 1000 1/min max. 0.2 mm control-rod travel deduction allowable.

Control-lever position 46.5°, after switch-over point (of starting curve) control-rod travel deduction must be greater than 0.2 mm.

4 Checking pnuematic shutoff box

Control lever at idle stop. At  $n=290 \, \text{min}^{-1}$  and  $pu=450 \, \text{mbar}$ , control rod must readily go to a travel of 0 mm.

- 5. Overflow valve 1 469 990 351
- Port closing (difference) between greatest/smallest value 1° camshaft maximum
- 7. FBG setting

FBG setting and blocking per mean port closing value of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft after cyl. 1.

- 8. Checking ELR control magnet
  - Control lever at idle stop At n = 315 1/min, I = 1.8 A, Control-rod travel = (12.6-14.0 mm, fuel delivery (32.0-40.0) ccm/1000 strokes.

Note:

If the fuel delivery measured is higher than 2.0 ccm/1000 strokes outside of inspection tolerance, replace control magnet.

- Control lever at full-load stop
At n = 2950 1/min, I = 3 A (short duration), control-rod
travel = 0-1.0 mm

Start check: At n = 100 l/min, l = 1.8 A, fuel delivery min. 55.0 ccm/1000 strokes.

9. Intermediate control curve (control-lever position) inspection

Control lever 30°, n = 1000 l/min, control-rod travel = 6.8-7.5 mm

£ 4.9

T

WPP 001/4 VOL 6,0 g

7. Edition

PES 6 MW 100/320 RS 1004

supersedes 9.82 company Volvo

TD 60 B

Komb.-Nr. U 403 446 1U4 -5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300 - 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 2,80-2,90

RQV 300 ... 1400 MW 6 R

Port closing at prestroke mm (from BDC)RW = 9.0 - 12.0 mm(2.75-2.95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,6+0,2	8,35 - 8,55	0,35(0,6)			
300	5,2-5,4	0,95-1,35	0,35(0,55	)		
1400 500	10,6+0,2 9,3+0,1		0,5 (0,7) 0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed	•	Intermediat	e rated sp	eed	Lower rated	speed		Sliding	leeve travel
	rev/min Control rod travel mm 2	Control rod ta travel mm rev/min (2a)	of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel	rev/min	mm
max.	1400 1700	15,2-17,8 0,0-1,0				12	300	mind.7,0 5,2-5,4 480 = 2,0	500	1,3-1,4 2,8
ca. 64	10,7 4,0	1440-1450 1550-1580				<b>3</b> a			1450	8,2

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

l-load delivery ntrol-rod stop (104°F) (2) Rotational-speed (2b) limitation intermediate speed		speed (So)	idle switchin	ng point	travel	Control cod	
rokes rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min		
3	_ 4	5	6	7	8	9	
85,5	* LDA 1400	0,67bar 85,0-89,0 (83,0-91,0)	100				
	LDA 500	0 bar 48,0-50,0 46,0-52,0)	300	9,5-13,5 (7,0-16,0)			
	3	bar 1440-1450* LDA 1400 87,5) LDA	bar 1440-1450* LDA 0,67bar 85,0-89,0 (83,0-91,0) LDA 0 bar 500 48,0-50,0	bar 1440-1450* LDA 0,67bar 100 85,0-89,0 (83,0-91,0) LDA 0 bar 500 48,0-50,0	bar 1440-1450* LDA U,67bar 100 120,0-130,0 (85,5 87,5) LDA 0 bar 300 9,5-13,5 (7,0-16,0)	bar 1440-1450* LDA U,67bar 100 120,0-130,0 (117,0-133,0) (83,0-91,0) LDA 0 bar 500 48,0-50,0 (7,0-16,0)	

Checking values in brackets

\* 1 mm less control rod travel than cot 2

12.85

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure increasing

VOL 6,0g

-2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
Ppe. RS 1004 mit MW 6 R	0,21	0,27 0 0,67	9,7-9,8 10,2-10,5 9,3-9,4 10,6-10,8

Notes

(1) when n=

rev/min and gauge pressure =

bar (~ maximum full-load control rod travel)

G8

# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 6,0 n

PES 6 MW 100/320 RS 1004 Z RQV 300 ... 1400 MW 22 O 403 446 110 supersedes 5.82 company: Volvo

5. Edition

36 TO 11 15 O 4:1 13

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travet mm 2	(2,75-2,95) Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,7+0,1	8,35-8,55	0,35(0.6)			
300 1000	4,8-5,0 9,5-9,6		0,35(0,55			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediate	e rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
Degree of deflection of control lever	revimin Control roditravel mm 2:	Control rod ta travel mm rev/min (28	of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	1400 1700	15,2-17, 0,0-1,0	8			ca.11	100 300	min.6,5 4,8-5,0		
ca.60	9,6 4,0	1140-1450 1565-159				320-460 ③				

Torquía control travel a =

mn

#### C. Settings for Fuel Injection Pump with Fitted Governor

Control-ro	load delivery Rotational-speed 2b Fuel de trol-rod stop coil temp. 40°C (104°F) 2 intermediate speed		high idle s		idle	fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1000	0,50 bar 83,5-85,5 (81,5-87,5)	1440-1450*	LDA 1000	0 bar 72,0-74,0 (70,0-76,0)	100 300	120,0-150,0 (117,0-153,0 9,5-13,5 (7,0-16,0)	)	

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.85

BOSCH

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Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

VOL 6,0n

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	Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
1		Gauge pressure = bar	Gauge pressure = bar	mm (1) ,
	RS 1004 Z with MW 22	0,19	0,25 0 0,50	9,9-10,0 10,3-10,6 9,5-9,6 10,7-10,8

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 Vol 6,0 t 1

1. Edition

En

Testoil-ISO 4:13

PES 6 MW 100/320 RS 1004-1 RSV 325-1400 MW 2/308 0 403 476 017 supersedes companyVolvo engine TID 60 D 150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,80-2,90 (2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>1</sup> /100 strokes . 3	Difference cm // 100 strokes 4	Control rod travel mm 2	Fuel delivery cm*/100 strokes 3	Spring pre-tensioning (forque-control valve) mm 6
700	10,3-10,4	7,6-7,8	0,35 (0,6)			
325	4,4-4,6	0,95-1,35	0,35(0,55)			
		į				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	interme	ediate rate	d speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control   Control rod   travel   mm   11
loose	800	0,3-1,0		<u> </u>	<u> </u>	ca. 20	325 325	4,0	350 500	10,9-11,0 10,3-10,4
ca. 54	1515-1	450 = 9,3 545 = 4,0 ,3-1,7					100	min. 19	1	1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting f	uel delivery 5	(S) Idi	e stop
Test oil to	emp 40°C (104°F) cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm 1/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
700	76,0-78,0 (74,0-80,0)		1000	82,0-86,0 (80,0-88,0)	100	120-130 (117-133)		
	,				325	9,5-13,5 (7,0-16,0	)	
								<u> </u>

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.85

BOSCH

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# Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 8,7j1

1. Edition

supersedes\_

company

Daimler-Benz U M 360 A

155 kW

PE 6 MW 100/720 RS 1007-1 RO 300/1250 MW 12-1

0 403 546 004

1 - 5 - 3 - 6 - 2 - 4 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection, Pump, Settings

Port closing at prestroke

mm (from BDC) pu \_ Q ()\_12 () mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250 300 750	11,2+0,1 6,9-7,1 11,2+0,1	1,35-1,75	0,35(0,6) 0,35(0,55 0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

PRG che	ck Control rod travet	Full-load s Setting po rev/min 3	•	_	rev/min	Idle spec Setting p rev/min 7	coint Control red travel	Test spe	cifications 5 Control rod travel mm	Torque d rev/min 11	Control rod (3)
650 1550	13,1-13,9 VH 46° 0,1-1,0	650	13,5	10,2 4,0	1295-1310 1395-1425		7,0		min.9,0 6,9-7,1 35 = 2,0		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	letivery on control lever	Control rod stop 3a	Fuel deliv	Fuel delivery characteristics (3b)			uel delivery d Gontre
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm³/-1000 strokes 5		rev/min 6	red travel cm <sup>3</sup> /1000 strokes / mm 7
1250	99,5-101,5 (97,5-103,5)	500	750	93,0-97,0 (91,0-99,0)		100 300	125,0-135,0 (122,0-138,0) 13,5-17,5 (11,0-20,0)

Checking values in brackets

12.85

WPP 001/4 FIA 8.1 b

3. Edition

supersedes 5.82 company: Fiat 8360.05

 $\frac{1}{1} - \frac{1}{5} - \frac{1}{3} - \frac{1}{6} - \frac{1}{2} - \frac{1}{4} = 0 - 60 - 120 - 180 - 240 - 300 + 0.5 (0.75)$  engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings 2,50-2,60

PES 6 MW 100/720 RS 1008

FRQV 300 ... 1300 MW 13 DR

Port closing at pres		2.45-2.65)	mm (from BDC)	at 10,5	mm RW	
	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1300	12,5+0,	8,85-9,05	0,35(0,6)			
900 300	7,5-7,0 13,0+0,2		0,35(0,55 0,5 (0,7)	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed	<del></del>	Intermediate	s rated sp	eed	Lower rated	speed		Stiding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Waver C	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm
ınax.	1300 1600	15,2-17,8 0,0-1,0	-	-	-	ca.14	100 300	min.9,5 7,5-7,6	300 740 1350	0,3-0,9 3,4 8,0
ca.60	11,6 4,0	1350-1360 1440-1470				380-48 3	<b>.</b>			

Torque control travel a = 0,5

Instructions Test electrically unlocked starting delivery with 12 V.

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		Rotational-speed (2b) limitation intermediate speed	Fuel deli- high idle s	very characteristics (5e)	Idle	fuel delivery 6	Torque travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strakes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	<u>                                     </u>	8	9
1300	88,5-90,5 (86,5-92,5)	1350-1360*	800	86,5-90,5 (84,5-92,5)	100	135-145 (132-148)		13,0+0, 12,5+0,
					300	9,5-13,5 (7,0-16,0)		
					100-	-220(80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 12,7 b

4. Edition

5.63 3...

PE 8 MW 100/720 LS 1010 RO 300/1150 MW 17 Komb.-Nr. 0 403 548 001

supersedes 5.82 company KHD

BF 8 L 413 F 212 kW (288 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3.05-3.25)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod <sup>2</sup> travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750 300 500	12,2+0,1 6,3-6,5 9,9-10,0	1,2-1,6	0,35(0,6) 0,35(0,55 0,55(0,7)	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	( )	Full-load s Setting po	int	Test spec	cifications (4)	Idle spec Setting p	oint		cifications (5)	Torque d	(3)
rev/min	Control rod travel mm 2		Control red travel rnim 4	Central red travel rnm 5	rev/min	rev/min 7	Control red travel rrinto 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	18,2-20,8	650	19,0	9,2	1195-1210	300	6,4	100	min.7,8	1150	10,2-10,5
1400	VH = 46° 0,0-1,0			4,0	1240-1270			300 2,0	6,3-6,5 365-405	1050 750	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f Idle spee	uel delivery d G
rev/min t	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	rød travel cm <sup>3</sup> /1000 strökes/ mm 7
LDA 750	0,74 bar 131,0-133,0 (129,0-135,0)		LDA 500	0 bar 87,5-89,5 (85,5-91,5)	100 300	136,5-146,5 (133,5-149,5) 12,5-16,5 (10,0-19,0)

Checking values in brackets

12.85

**BOSCH** 

KHD 12,7b

Testatn =

500

rev/min decreasing pressure ~ in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure	oar Gauge pressure ·	bar mm (1)
LS 1010 MW 17	0,16	0,50 0,74 0	10,3-10,5 11,8-11,9 12,2-12,3 9,9-10,0

Notes

(1) when n

rev/min and gauge pressure

bar ( maximum full-load control rod travel)

Test electrically unlocked starting delivery with 24 V.

615

Testoil-ISO 4113

WPP 001/4 KHD 12.7 d 8. Edition

PE 8 MW 100/720 LS 1010 RQV 300-1150 MW 23 Komb.-Nr. 0 403 548 002

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

 $0 - 45 - 90 - 135 - 180 - 225 - 270 - 315 \pm 0.5 (0.75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 8,83 company: KHD

BF 8 L 413 F 212 kW (288 PS)

/ 2100 min-1 206 kW

/ 2300 min-1

A. Fuel Injection Pump Settings

mm (from BDC) RW = 9,0-12,0

(Maxidyne)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuet delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	13,6-13,8	0,35(0,6)			
300 500	6,3-6,5 10,2-10,8		0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	9	Sliding s	leeve travel
		Control rod (a)	Degree of deflection		Control rodi	Degree of deflection		Control rod travel		, ①
of control	rodtravel		of control	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1180 1400	15,2-17,8 0- 1,0				ca.18	100 300	min.8,0 6,3-6,5	300 500	1,4 3,2-3,8
ca.63	9,2 4,0	1160-1170 1235-1265					430-	490 = 2,0	1200	8,5-8,6
					<u> </u>	<u>3a</u>	<u> </u>			<u> </u>

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d		limitation	Fuel deliv	very characteristics 5a	Idi <del>e</del>	•	Torque- travel	control (5)
Test oil temp. 40°C (104°F) 2 rev/min cm³/1000 strokes		rev/min 4a			switchir rev/min 6	1	rev/min 8	Control rod travel mm
LDA 700	0,8 bar 136,0-138,0 (134,0-140,0		LDA 500	0 bar 94,0-96,0 (92,0-98,0)	100 300 100-	136,5-146,5 (133,5-149,5) 12,5-16,5 (10,0-19,0) -230 (80-250)	1050 780	12,5+0,1 11,2+0,1 12,5+0,1 10,2+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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Test atn =

500

rev/min decreasing pressure - in bar gauge pressure

KHD 12,7 d -2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
LS 1010 MW 23	0,8	0,24 0,38 0	12,5-12,6 10,5-10,6 12,2-12,3 10,2-10,3

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 RVI 8.8 k

7. Edition

(4) estoil-ISO 41

PES 6 MW 100/320 RS 1016 ROV 300-1300 MW 25 Komb.-Nr. 0 403 446 123

supersedes 1.84 company: RVI

MIDR 06.02-12 engine:

125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings 3,00-3,10 Port closing at prestroke (2,95-3,15) mm

mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference		Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6	
1300	11,1+0,1	8,95-9,15	0,35(0,6)				
300 900 500	5,7-5,8 11,1+0,1 9,8-9,9	0,95-1,35	0,35(0,55 0,5 (0,7)	)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Port closing mark cyl. 10,5 ° after port closing

Upper rated	speed	1	Intermediate rated speed			Lower rated	speed		Slidina s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	travel 🕛	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3		(1) mm
max.	1300 1650	15,2-17,8 0 -1,0				340-600	200 300	max.7,5 5,8-5,9		
ca.62	10,1 3,9	1370-1380 1495-1525				<b>9</b>				

Torque Control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		limitation intermediate speed	high idle s	rery characteristics (5e)	Starting Idle switchle		Torque- travel	Control 5 Control rod
rev/min	cm³/1000 strokes	rev/min 4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 1300	0,67 bar 89,5-91,5 (87,5-93,5)	1355-1365*	LDA 900 LDA 500	0,67 bar 85,0-89,0 (83,0-91,0) 0 bar 56,0-58,0 (54,0-60,0)	100 300 100-	95,0-105,0 (90,0-110,0) 9,5-13,5 (7,0-16,0) 230(80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 1016 mit MW 25	0,23	0,67 0 0,20	10,7-10,9 11,1-11,2 9,8-9,9 10,2-10,3

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

WPP 001/4 RV1 8,8 k 2

8. Edition

1 × 3 T = 7 T = 7

PES 6 MW 100/320 RS 1016 RQV 300 - 1300 MW 25-1 Komb. 0 403 446 122 1 - 5 - 3 - 6 - 2 - 4 je 60° company RVI MIDR 06.02-12 125 kW (170 PS)

\*Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke	3.00-3.10	mm (from BDC)	RW = 9.0	-12,0 mm
Detetional anged	Control and	Eugl delivery	Difference	Control	Eval daliver

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1-9,3	0,35(0,6)			
300 900 500	6,2-6,3 11,1+0,1 9,8-9,9		0,35(0,55 0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	Sliding sleave travel		
deflection		Control rod ta	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0		
of control	rod travel	rev/min (2s)	of control lever	rev/min	mm: 4	of control lever	rev/min	mm ③	rev/min	mm		
1	2	3	4	5	6	7	8	9	10	11		
max.	1400 1650	15,2-17, U-1,U				ca.12	200 300	max.7,5 5,8-5,9				
ca. <del>o</del> 2	10,1	1455-1465 1575-1605				<b>3</b> 9	490-5	50 = 2,0				

Torque control travel a =

ШШ

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten			high idle s	very characteristics 5a	idle switchin	ng point	Torque- travel	Control (5) Control roc travel
1	2	3	4	5	6		В	9
LUA 1400	0,5 bar 91,5-93,5 (89,5-95,5)	1455-1465*	LDA 900 LDA 500	0,5 bar 87,5-91,5 (85,5-93,5) 0 bar 59,0-61,0 (57,0-63,0)	100 300 100-	91,5-93,5 (89,5-95,5) 9,5-13,5 (7,0-16,0) 230(80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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VI 8

8,8 k2

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

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Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure ≈ bar	Gauge pressure = bar	mm (1) .
RS 1016 with MW 25-1	0,23	0,5 0,2 0	10,7-10,9 11,1-11,2 10,2-10,3 9,7- 9,8

Notes

(1) when n ≈

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 RV1 8,8k5

1. Edition

toil-ISO 4113

PES 6 MW 100/320 RS 1016 RQV 300-1300 MW 25-5 U 403 446 165 supersedes =

company: RVI

engine:

MIDR 06.02-12F

<sup>9me:</sup> 125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel injection Pump Settings

	Port closing at pres	troke (2	95-3 15)	mm (from BDC)	KW = 9-16	2 11811	
	Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
	rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
Ì	1	2	3	4	2	3	6
	1300	11,1+0,1	8,9-9,1	0,35(0,6)			
	300 900 500	5,7-5,8 11,1+0,1 <b>9</b> ,9-10,		0,35(0,55 ·	)		
				1		1	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed	1	Intermediat	e rated sp	eed	Lower rated	speed		ı	Sliding sl	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2	deflection	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm (		rev/min	mm
1	2	3	4	5	6	7	8	9	$\preceq$	10	11
max.	1300 1650	15,2-17,8 0-1,0					200 300	min.3, 5,9-6,			
ca.64	10,1 4,0	1370-1380 1495-1525				340-600 3a					

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b timitation intermediate speed			Starting Idle switchir	• 0	Torque-	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm 9
LDA 1300	0,66 bar 89,5-91,5 (87,5-93,5)	1370-1380*	LDA 900 LDA 500	0,65 bar 86,5-90,5 (84,5-92,5) 0 bar 56,0-58,0 (54,0-60,0)	100 300 100-	95,0-105,0 (92,0-108,0) 9,5-13,5 (7,0-16,0) 230(80-250)		

Checking values in brackets

12.85

**BOSCH** 

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<sup>\* 1</sup> mm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

RVI 8,8k5

4113	)
toil-ISO	
les.	

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 1016 with MW 25-5	0,20	0,23 0 0,66	10,2-10,3 10,7-10,9 9,9-10,1 11,1-11,2

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Start-of-delivery mark 8" after start of delivery

②

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 RVI 8,8 g

4. Edition

<u>En</u>

Stoil-150 4113

PES 6 MW 100/320 RS 1016 RO 750 MW 42

0 403 446 130

1 - 5 - 3 - 6 - 2 - 4

 $0 - 60 - 120 - 180 - 240 - 300 \pm 0,50(0,75)$ 

company RVI MIDR 06.02-12 engine: 100 kW (136 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,95-3,15)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
700	14.5+0.	13,35-13,55	0,35(0,6	)	3	6
:						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che	g of slider ck	വ	Full-load : Setting po	-	_	cifications (4)	idle spec Setting p	_		cifications (5)	Torque o		(3)
rev/min 1	Control rod travel mm 2	O	rev/min 3	Control rod travel mm 4	Control red travel mm 5	rev/min 6	rev/min 7	Control rod travel rrinn 8	rev/min 9	Control rod travel mm	rev/min 11	travel	
					13,5 4,0 0-1,0	795-805							

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop  (3a)	Fuel deliv	ery characteristics	36)	Starting for	uel delivery d 6
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	red travel cm <sup>3</sup> /1000 strokes / mm 7
700	133,5-135,5 (131,5-137,5)				ì	100	80,0-90,0 (77,0-93,0)

Checking values in brackets

12.85

324

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# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 4,5 e

PES 4 MW 100/320 RS 1102 U 403 444 107 1 - 3 - 4 - 2 U-9U-180-270 - 0,50 (0,75)

RQV 300-1100 MW 39-5

supersedes

4. Edition

company:

Vo1vo D 45

4.85

engine:

85 kW

0 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> ; 100 e!/okes 4	Control rod travei mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,7+0,1	11,1-11,3	0,35(0,6)			
300 1000	6,4-6,5 12,7+0,1		0,35(0,55 0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed		Intermediate	rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
Degree of deflection	rev/min Control	Control rod ta	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		①
of control lever	rod travel		of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150 1350					ca.14	300 100	6,4-6,5 min.8,0		
ca.48	11,7 4,0	1140-1150 1210-1240		,		320-450 ③		•		

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	d stop np. 40°C (104°F) 2	Rotational-speed (2b) limitation intermediate speed rev/min (4a)	high idle s	<b>.</b>	idle switchi		Torque- travel	Control 5  Control rod travel
1	2	3	4	5	6	7	8	9
700	111,0-113,0 (109,0-115,0)		1000	112,0-116,0 (110,0-118,0	300	130,0-140,0 (127,0-143,0 13,0-17,0 (10,5-19,5) 20(80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 4,5 d

En

3. Edition

PES 4 MW 100/320 RS 1102 RQV 300-1200 MW 39-2 0 403 444 104 supersedes

company:

Volvo TD 45

4.85

engine: TD

82,5 kW (112 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 2,80-2,90

RW = 9,0 - 12,0 mm

Port closing at pres	stroke	(2.75-2.95)	mm (from BDC)			<u> </u>
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control red travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,2+0,1	10,0-10,2	0,35(0,6)			
300 1000	6,5-6,ō 12,2+0,1		0,35(0,55 0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediat	e rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
Degree of deflection of control	rev/min Control rod trave	mave:	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever	mm	rev/min (28	lever	rev/min	mm (4)	lever	rev/min	mm ③	rev/min	
1	2	3	4	5	6	7	В	9	10	11
max.	1200 1450		3			ca.12	100 300	min.8,1 6,5-6,6		
ca.48	11,2 4,0	1240-125 1290-132				<b>3</b> a	400-	550 = 2,0		

Torque control travel a =

mn

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed (2b) limitation intermediate speed	Fuel deli- high idle s	very characteristics 5a speed 5b	Starting Idle switchin		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
700	100,0-102,0 (98,0-104,0)	1240-1250*	1000	101,0-105,0 (99,0-107,0)		130,0-140,0 (127,0-143,0		
					300	13,0-17,0 (10,5-19,5)		
					100-2	220 (80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 RVI 5,5 a

4. Edition

En

PES 6 MW 80/320 RS 1104 RSV 300-1450 MW 2/801

U 403 476 013

7.84 supersedes RVI

company engine

MD 060212 97.8 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,70-1,90)

mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-confrol valve)
rev/min	mm (2)	cm1/100 strakes	cm <sup>1</sup> / 100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
900	10,4+0,1	5,05-5,25	0,25(0,4)			
300 1450	4,7-4,9 9,4-9,5	0,85-1,15	0,2(0,35) 0,35(0,45	)		
		İ				
				-  -		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	r rated speed Control rod travel mm		Intermediate rated speed		Control- lever deflection in degrees	Control- lever deflection in degrees		ハッノ	rque contro! Contro! rod trave! mm	
1	2	3	4	5	6	7	8	9	10	11
loose	800 X =	0,3-1,0 4,0				ca.20	300 250	4,8 max.ô,4	900 1050	10,4-10,5 10,0-10,2
Ca.58	8,4 = 3,9 = 0-1,0	1515-1525 1540-1570 = 1650							1450 1150	9,4-9,5 9,6-9,8

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp 40°C (104°F)	Rotational- speed limitat Note changed to		nel delivery paracteristics	Starting f Idle	uel delivery 5	<b>49</b> Idi	e stop Control rod
tea/wiu	cm/1000 strokes 2	rev/min 3	rev/min 4	cm·/1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	mm 9
900	50,5-52,5 (49,5-53,5)	1515-1525*	1425	54,0-56,0 (52,0-58,0)	100 300	(70-90) RW = 15 m		

Checking values in brackets

12.85

<sup>\* 1</sup> mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 VOL 6,0 r 2

2. Edition

En

PES 6 MW 100/320 RS 1104 RSV 650-750 MW 4/311-2

0 403 476 018

supersede Volvo company TD 60 DG engine 86 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2,80-2,90 (2,75-2,95)

mm (from BDC)RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm /100 strokes	cm <sup>1</sup> / 100 strokes 4	mm 2	cm 1100 strokes	mm 6
700	11,1+0,1	9,05-9,25	0,35(0,6)			
650	4,5-4,6	1,7-2,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm				Control- lever deflection in degrees		rated speed Control rod travel mm	I	rque control Control rod travel mm	
loose	800 x =	0,3-1,0 3,0		<u> </u>	·	ca.34	650 650	4,0 4,5-4,6		
ca.40	760-79	60 = 10,1 10 = 4,0 0,3-1,7					690-75	0 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp 40°C (104°F)	Rotational- speed limitat Note changed to ) rev/min	el delivery aracteristics cm <sup>3</sup> /1000 strokes	Starting f fdle rev/min	cm <sup>3</sup> /1000 strokes	•	e stop   Control rod   travel   mm   9
700	90,5-92,5 (88,5-94,5)			100 650	130-140 (127-143) 17,0-21 (15,5-22)	0	

Checking values in brackets

12.85

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<sup>\* 1</sup> mm less control rod travel than cot 2

WPP 001/4 MB : , 7412 2. Edition

PES 6 MW 100/720 RS 1101 ROV 300-1300 MW 34 0 403 446 124 Ĭ - 5 -3 -2 -6 -0 - 60 - 120 - 180 - 240 - 300 + 0.50 (0.75)Fuel injection test tubing 1 680 750 008
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers supersedeMB 8,7m vom 8.85 company:Daimler-Benz engine: OM 362 LA 141 kW

A. Fuel Injection Pump Settings
3,20-3,30
ort closing at prestroke
(3,15-3,35)
mm mm (from BDC)

RW = 9.0 - 12.0 mm

٠.			3.15-3.351				
	Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	1300 300 800 500	11,9+0, 6,0-6, 11,9+0, 10,2+0,	1 1,05-1,45	0,35(0,6 0,35(0,5 0,5 (0,7 0,35 (0,	5)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	ed	Lower rated	speed		Sliding	Sliding sleeve travel	
Degree of deflection of control	rev/min Control	navo:	<b>19</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	, ①		
lever	rod travel	rev/min (	28	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	шш	
1	2	3		4	5	6	7	8	9	10	11	
max.		15,2-17,					ca.20	100 300	min.7,6		9	
	1600	0.1-1,0						_	6,0-6,1 520=2,0			
ca.61	10,9										· · · · · · · · · · · · · · · · · · ·	
	4,0	1400-145	70				<b>3</b>					

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

livery   stop  p. 40°C (104°F)	limitation			Idle		Torque- travei	Control Control rod	
cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	1	cm³/1000 strokes	rev/min	travel mm	
2	3	-	5	6	7	<del> </del>	9	
0,7 bar 94,5-96,5 (92,5-98,5)	1340-1350*	LDA 800 500	0,7 bar 89,5-93,5 (87,5-95,5) 54,5-56,5 (52,5-58,5)	100 300 100-	80,0-90,0 (77,0-93,0) 10,5-14,5 (8,0-17,0) 230 (80-250)			
	stop p. 40°C (104°F) (2) cm³/1000 strokes 2 0,7 bar 94,5-96,5	10p   limitation	atop   limitation   high idle state apead   rev/min   3   LDA   Section   1340-1350*   Section   1340-1350*   Section   Sectio	100 strokes rev/min 49 rev/min cm³/1000 strokes 2 1340-1350* LDA 0,7 bar 89,5-96,5 (92,5-98,5)	Imitation   Intermediate speed   Intermediate spe	stop p. 40°C (104°F) 2 imitation intermediate speed rev/min 3 rev/min cm³/1000 strokes 6 rev/min cm³/1000 strokes 6 rev/min 6	stop p. 40°C (104°F) 2 limitation intermediate speed rev/min 2 3 4 5 6 7 8 8 1 1340-1350*   1340	

Checking values in brackets

BOSCH

\* 1 mm less control rod travel than col 2

MB 5,7a 12

Test at n =

rev/min decreasing pressure - in bar gauge pressure

	3
1	67
ł	T-
1	4
1	4
f	V
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1	S
1	75
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1	
1	·

Pump/governor Setting Gauge	e pressure = bar	Measurement  Gauge pressure = bar	Control rod travel	diminution difference
RS 1101 with RQVMW 34	0,1	0,12 0 0,70	10, 10,	,4-10,5 ,9-11,1 ,2-10,3 ,9-12,0

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7a11 2. Edition

MB 8,7 p PES 6 MW 100/720 RS 1101 supersedes ROV 300-1300 MW 44 Daimler-Benz company: OM 362 LA P = 0 403 446 134 engine:  $\begin{bmatrix} 1 - 5 - 3 - 6 - 2 - 4 \\ 0 - 60 - 120 - 180 - 240 - 300 + 0,50 (0,75) \end{bmatrix}$ 141,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

Port closing at pre	stroke	3,20-3,30 (3,15-3,35)	mm (from BDC)	RW = 9	,0 - 12,0 mm	•
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
300 300 800 500	11,9+0,1 6,0-6,1 11,9+0,1 10,0+0,1		0,35 (0,6 0,35 (0,5 0,50 (0,7 0,35 (0,6	5)		

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	sleeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (28)	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm (3		1 0
1	2	3	4	5	6	7	8	9	10	11
max.	1330 1600	15,2-17,8 0,1-1,0				ca. 11		min.7,6 6,0-6,1 80=2,0		
ca.64	10,9 4,0	1340-1350 1435-1465								
L		_				<b>3</b> 9				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-foad delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed (2b) limitation intermediate speed	high idle s	very characteristics (5e)	Starting Idle switchin		Torque- travel	Control Control rod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 atrokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
LDA 1300	0,7 bar 93,5-95,5 (91,5-97,5)	1340-1350*	LDA 800 LDA 500	0,7 bar 87,5-89,5 (84,5-92,5) 0 bar 51,5-53,5 (49,5-55,5)	100 300 100-	80,0-90,0 (77,0-93,0) 10,5-14,5 (8,0-17,0) 250 (80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

MB 5,7a 11

Testoil-ISO 4113

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod trave	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
RS 1101 with RQV MW 44	0,1	0,12 0 0,7	10 10	,4-10,5 ,9-11,1 ,0-10,1 ,9-12,0

Notes.

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1) and Governors

2. Edition

\$2.50 A.15

(I)

PES 8 MW 100/720 RS 1110 RQV 500-1200 MW 29 U 403 448 120 company: Perkins
engine TV 8.640 GR
185 kW

WPP 001/4 PER 8,8 9

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 3,00-3,10

RW = 9,0-12,0 mmmm (from BDC) Port closing at prestroke 2.95-3.15) Spring pre-tensioning (torque-control valve) Difference Control rod travel Control rod **Fuel delivery** Fuel delivery Rotational speed cm³/ 100 strokes cm<sup>3</sup>/100 strokes cm<sup>3</sup>/100 strokes rev/min mm mm u,35(0,6) 9,9-10,1 1180 13,8+0,1 0.95 - 1.350,35(0,55 7,3-7,4 500 0,5(0,7) 800 13,8+0,1

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	eed ,	Lower rated	speed	4	Sliding sleeve travel	
Degree of deflection of control lever	Control rod travel	Control rod travel mm rev/min (2a)	of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	0
max.	1200 1400	15,2-17,6 0,1-1,0	-	•	_	ca.15	500 100	7,3-7,4 min.100		
ca.64	12,8 4,0	1220-1225 1255-1260				<b>3</b> 9				

Torque controi travel a =

للانئ

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed (2b) Fuel deli limitation intermediate speed			Starting Idle switchli	<u> </u>	Torque- travel	Control cod
rev/min	cm³/1000 strokes	rev/min 44	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1_	8	3	4	5	6	7	8	9
1180	99,0-101,0 (97,0-103,0		800	93,0-97,0 (91,0-99,0)	100 500 100-	19,0-21,0 mm RW 90,0-100,0 (87,0-103,0) 9,5-13,5 (7,0-16,0) 400(80-420)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

BOSCH

#### Port closing and TDC markings

Comb. - No.

... 120

 $^{\circ}$  camshaft between port-closing and TDC

at control-rod travel 10,5 mm

15°

## **Test Specifications** Fuel Injection Pumps ① and Governors

WPP 001/4 MB 6.0d12

1. Edition

PES 6 MW 100/720 RS 1114 /RS1114-1 RQV 300-1300 MW 48 0 403 446 145 Fuel injection test tubing 1 680 750 008 supersades -

Daimler-Benz company: OM 366 A engine

125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
3,70-3,80
(3,65-3,85) mm mm (from BDC) RW = 9.0 - 12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300 300 700	11,0+0,1 7,8-7,9 12,1+0,1	1,0-1,4	0,35(0,6) 0,35(0,5) 0,5 (0,7)			•

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Stiding sleeve travet	
deflection	rev/min Control rod travel mm	travel 🗢	Degree of deffection of control lever	rev/min S	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm
max.	1330 1520	15,2-17,8				ca. 18	100	min. 9,4 7,8-7,9		
ca. 52	10,0 4,0	1340-1350 1430-1460				<b>3</b>	330-0	600		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil ten rev/min	stop np. 40°C (104°F) 2		Fuel delic high idle s rev/min	very characteristics (5e) poeed (5b) cm³/1000 strokes	Starting Idle switchli rev/min	ng point	Torque- travel rev/min	Control 5 Control rod travel
1300	82,0-84,0 (80,0-86,0)	1340-1350*	700	83,0-85,0 (81,0-87,0)	300 100-	80,0-90,0 (77,0-93,0) 10,0-14,0 (9,0-15,0)	1300 700 720 800 900	12,1+0, 11,8+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.85



# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 6.0 d 4

1. Edition

supersedes

PES 6 MW 100/720 RS 1115 IRQV 300-1300 MW 50 0 403 446 147

1-5-3-6-2-4

0-60-120-180-240-300 ± 0,50 (0,75)

companDaimler Benz engine: OM 366 LA

If test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
ev/min	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1300	11,9+0,1	9,3-9,5	0,35(0,6)			
300 600 500	5,6-5,7 11,9+0,1 10,1+0,1		0,35(0,55) 0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed	•		Intermediate	rated sp	eed	Lower rated	speed		Sliding	Sliding sleeve travel	
Degree of deflection of control	rev/min Control rod travel	Control rod travel mm	9	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1	
lever 1		rev/min 3	(28)	lever	rev/min 5	mm (4)	lever 7	rev/min 8	mm (3	rev/min	mm 11	
max.	1340 1550	15,2-17 0-1,					ca. 20	100	min.7,2 5,6-5,7		,	
ca. 54	10,9 4,0	1340-13 1435-14										
							<b>3</b> a)	370-5	550			

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		limitation intermediate speed	high idle s	very characteristics (5e)	Starting idle switchir		Torque- travel	control 5 Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm .	
1	2	3	4	5	6	7	8	9	
LDA 1300	0,7 bar 93,0-95,0 (91,0-97,0)	1340-1350*	LDA 600 LDA 500	0,7 bar 86,5-90,5 (84,5-92,5) 0 bar 57,0-59,0 (55,0-61,0)	100 300 100-	80,0-90,0 (77,0-93,0) 10,5-14,5 (8,0-17,0)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

H12

MB 6,0 d 4

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Testoil-ISO 4113

Gauge pressure = bar	Gauge pressurė = bar	mm (1)	
<del> </del>		(1)	
0,18	0,21 0 0,70	11, 10,	8-10,9 4-11,7 1-10,2 9-12,0
	0,18	0,18 0,21 0 0,70	0,18 0,21 0,10, 10, 10, 10,

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 VUL 4,5 K

n\_\_\_\_

2. Edition

supersedes 10.84 company: Volvo-BM

ingine: TD 45-EM

85 kW

PES 4 MW 100/320 RS 1116 RQV 300-1100 MW 51 0 403 444 108 1-3-4-2 0-90-180-270 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel injection Pump Settings

Port closing at pres	troke	(3,15-3,35)	mm (from BDC)	RW = 9.0	-12,0 mm	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
300 1000	12,5+0,1 5,8-5,9 12,5+0,1 10,5+0,1	1,3-1,7	0,35(0,6) 0,35(0,55 0,55			,

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed	**************************************	Intermediate	rated sp	eed	Lower rated	speed	4	Stidings	Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Conitrol rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm 11	
ınax.	1100 1350	15,2-17,8 0-1,0				ca.12	300 100	5,8-5,9 min.8,0			
ca.52	11,5 4,0	1140-1150 1200-1230				<b>③</b>	330-4	50			

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delivery characteristics 5  high idle speed 5b  Starting fuel delivery idle switching point						Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm		
1	2	3	4	5	6	7	8	9		
LDA 700	0,75 bar 116,0-118,0 (114,0-120,0)		LDA 1000 LDA 700	0,75 bar 117,0-121,0 (114,5-123,5) 0 bar 79,0-81,0 (76,5-83,5)	100 300 100-	150,0-160,0 (147,0-163,0, 13,0-17,0 (10,5 <b>-</b> 19,5) 220(80-250)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

**BOSCH** 

VOL 4,5k

Test at n =

700

rev/min decreasing pressure - in bar gauge pressure increasing

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Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = ba	r Gauge pressure = ba	r mm (1) .
RS 1116 with MW 51	0,26	0,52 0 0,75	10,6-10,7 12,4-12,6 10,5-10,6 12,5-12,6

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 PEN 6.1.

1. Edition

En

4.4

01-180 4

PES 6 MW 100/320 RS 1119 RQV 350-1050 MW 54-1 0 403 446 157 supersedes companyVOI/VO

engine: TD 61

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2.95-3.15) mm (from BDC) 9-12 mm RW								
Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)			
mm	cm³/100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm			
2	3	4	2	3	6			
12,3+0,1	10,8-11,0	0,35 (0,6	)					
6,3-6,4	1,6-2,0	0,35 (0,5	)					
12,3+0,1		0,35 (0,7	<b>)</b>		•			
10,9+0,1								
	Control rod travel mm 2 12,3+0,1 6,3-6,4 12,3+0,1	Control rod travel  mm cm³/100 strokes 2 3  12,3+0,1 10,8-11,0  6,3-6,4 1,6-2,0	Control rod travel  mm cm³/100 strokes 2  12,3+0,1  10,8-11,0  0,35  0,6  12,3+0,1  0,35  0,35  0,35  0,7	Control rad travel mm cm³/100 strokes 3  12,3+0,1  10,8-11,0  0,35  0,5  12,3+0,1  10,8-2,0  0,35  0,5  0,35  0,7	Control rod travel   Fuel delivery   Control rod travel   Control rod tr			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	speed		Intermediate	e rated sp	eed	d Lower rated speed			Sliding s	leeve travel
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	deflection of control	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3 9		0
max.	1120 1280	15,2-17,8 0,1-1,0				ca. 16	350 100	6,3-6,4 min. 7,8		
ca. 45		1090-1100 1150-1180	-			ì	370-	-450		
						<b>3</b>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel delivingh idle s	very characteristics (5e)	Starting Idle switchir	, )	Torque- travel	control (5) Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	trave# mm
1	2	3	4	5	8	7	8	9
LDA 700	0,7 bar 108,0-110,0 (106,0-112,0		LDA 1000 LDA 700	0,7 bar 109,0-113,0 (107,0-115,0) 0 bar 82,0-84,0 (80,0-86,0)		19-21 RW 140-160 (137-163) 16,0-20,0 (14,0-22,0)		

Checking values in brackets

• 1 mm less control rod travel than col. 2

11.85

BOSCH

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

PEN 6,1 i

133	
4	
<u>S</u>	
<u>—</u>	
est	

300			
Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 1119 with MW 54-1	0,30	0,45 0 0,70	11,1-11,2 12,0-12,3 10,9-11,0 12,3-12,4

Notes.

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

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WPP 001/4 PEN 6,1 a

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1119-2 RSV 325...1250 MW 0 A 308 0 403 476 032 supersedes company Volvo-Penta engine TD 61 AW 132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

3,1-3,2 (3,05-3,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm /100 strokes 3	Difference cmy 100 strokes 4	Control rod travel mm 2	Fuel delivery cm /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	10,8-10,9	8,45-8,65	0,35(0,6)			•
325	6,1-6,2	1,2-1,6	0,35(0,55)			
			ł			

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800	0,3-1,0				ca. 22	325	5.5-5.6		
ca. 49	1340-13	00 = 9,8 70 = 4,0 0,3-1,7					325 100	6,0-6,1 min. 19		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat		rel delivery paracteristics	Starting f	uel delivery 5	<b>4a</b> ) idi		
rev/min	emp 40°C (104°F) cm <sup>1</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>4</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1000	84,5-86,5 (83,5-89,5)				100	160,0-180 (157,0-183	,0 ,0)		
					325	12,0-16, (9,5-18,5	D )		

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

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WPP 001/4 PEN 6,0 d
1. Edition

En

stoil-ISO 4113

PES 6 MW 100/320 RS 1119-2 RSV 325-1250 MW 2A 308 0 403 476 033 supersedes\_

company Volvo-Penta TD 61 APP 147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,45-2,65)

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery  cm <sup>1</sup> /100 strokes 3	Difference cm <sup>1</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm 1/100 strokes 3	Spring pre-tensioning (torque-control valve)
1000	10,8-10,9	8,5-8,7	0,35 (0,6)			
325	6,1-6,2	1,2-1,6	0,35 (0,55	;)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	er rated speed		Interme	ediate rate	d speed	Lower rated speed			Torque control	
Degree of deflection	Control rod travel	travel				Control- lever deflection	rev/min	travel mm	rev/min	travel mm
of control lever	mm 2	mm rev/min 3	4	5	6	in degrees	8	9	10	11
loose	800	0,3-1,0					·			
ca.22		300 = 9,8 370 = 4,0 ,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

I-load stop			uel delivery paracteristics	Starting findle	uel delivery 5	I Control rod	
mp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
85,0-87,0 (83,0-89,0)				100			
				325	12,0-16,0 (9,5-18,5)		
	mp 40°C (104°F) cm³/1000 strokes 2 85,0-87,0	speed limitat Note changed to ) rev/min  3  85,0-87,0	mp 40°C (104°F) cm²/1000 strokes 2  85,0-87,0	speed limitat Note changed to ) rev/min cm <sup>1</sup> /1000 strokes 2 3 characteristics changed to 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> 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5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 5 c	speed limitat Note characteristics rev/min 2 cm <sup>1</sup> /1000 strokes 2 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 100e characteristics rev/min 2 cm <sup>2</sup> /1000 strokes 5 cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm 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<sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strokes 100e cm <sup>2</sup> /1000 strok	speed limitat Note characteristics rev/min 2 cm <sup>1</sup> /1000 strokes 2 cm <sup>1</sup> /1000 strokes 2 cm <sup>1</sup> /1000 strokes 5 rev/min 2 cm <sup>1</sup> /1000 strokes 6 7 100 160,0–180, 157,0–183,	mp 40°C (104°F) mp 40°C (104°F) cm*/1000 strokes 2  85,0-87,0 (83,0-89,0)    Total deficition   Speed limitat

Checking values in brackets

\* 1 mm less control rod travel than cot 2

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WPP 001/4 PEN 6,1 c

1. Edition

En

**Festoil-ISO 4113** 

PES 6 MW 100/320 RS 1119-2 RSV 300-1050 MW 4 A 308-2 0 403 476 031 supersed s Volvo-Penta company TD 61 ACE engine 112 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 2,5-2,6

Port closing at prestroke

(2.45-2.65)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm·/100 strokes	mm
1	2	3	4	2	3	6
1000	10,8-10,9	8,5-8,7	0,35(0,6)			
300	6,1-6,2	1,2-1,6	0,35 (0,55	)		
				İ		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	rev/min 8	rated speed  Control rod  travel  mm  9	3 to	rque control  Control rod  travel  mm   11
loose	800	0,3-1,0			· · · · · ·	ca. 25	300 300	5,6 <b>-</b> 5.7		
ca.61	1140-1	100 = 9,8 170 = 4,0 0,3-1,7					100	min. 19	,	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (1G4°F)	Note	speed limitat Characteristics			Starting fuel delivery 5 4a Idle st		
rev/min 1	cm /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	travel mm 9
1000	85,0-87,0 (83,0-89,0)					160,0-180, 157,0-183,		
					300	12,0-16,0 (9,5-18,5)		
				_				

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

40

WPP 1/4 PEN 6,1 b

1. Edition

En

**Testoil-ISO 4113** 

PES 6 MW 100/320 RS 1119-2 RSV 650-750 MW 4 / 311-1 0 403 476 034 supersedes

company Volvo-Penta

engine TD 61 G 83 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,5-2,6 (2,45-2,65)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm1/100 strokes 3	Difference cm <sup>-1</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> 100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,5-11,6	8,9-9,1	0,35(0,6)			
650	6,1-6,2	1,7-2,1	0,35(0,55)			
:						

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	Interme	diate rate	d speed	Control- lever deliection in degrees 7	Lowe rev/min 8	r rated speed   Control rod   travel   mm   9	3 To	rque control Control rod travel mm
loose	800	0,3-1,0				ca. 34	650	5,6-5,7	350 500	12,0-12,1 11,5-11,6
ca.40	765-79	0 = 10,5 $5 = 4,0$ $0,3-1,7$					100	min. 19		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational speed limitat		iel delivery paracteristics	Starting f				
Test oil to rev/min	emp 40°C (104°F) cm/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm 11000 strokes 5	rev/min 6	cm <sup>-/</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
700	89,0-91,0 87,0-93,0)				100 (	160,0-180,0 157,0-183,0	<b>)</b>		
					650	17,0-21,0 (15,5-22,5			

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.85

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. < 1980 by Robert Bosch GmbH. Postfach 50. 0-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

40 WPP 001/4 PEN 6,1 e

1. Edition

En

PES 6 MW 100/320 RS 1119-2 RSV 650-750 MW 4/311-2 0 403 476 035 supersedes-

company Volvo -Penta TID 61 AG 102 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,5-2,6 (2,45-2,65)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>-y</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm·/100 strokes 3	Spring pre-tensioning (torque-control valve) mm
700	12,0-12,1	9,3-9,5	0,35(0,6)			
650	6,2-6,3	1,7-2,1	0,35(0,55)			
		And the state of t				

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

(1) Uppe	er rated speed	rev/min	Intern	rediate rat	ed speed	4	Lower rated speed			rque controt
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/mm	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0				ca. 24	650	6,2-6,3	·	
ca.41,5	750-760 765-795 950 = 0	) = 11,0 5 = 4,0 0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

load stop			iel delivery iaracteristics	Starting Idle	fuel delivery 5	(4a) Idi	e stop
np 40°C (104°F) cm·/1000 strokes	Note changed to ) rev/min	rev/min	cm³/1000 strokes	rev/min	cm '/1000 strokes	rev/min	Control rod travel mm
2	3	4	5	6	7	8	9
93,0-95,0 91,0-97,0)			*	100			
				650	17,0-21,0 (15,5-22,5		
7	onp 40°C (104°F) cm*/1000 strokes 2	speed limitat Note changed to ) rev/min 3	speed limitat Note changed to ) rev/min 3 4	speed limitat Note changed to ) rev/min cm³/1000 strokes 3 cm3/1000 strokes 5	Speed limitat Characteristics   Idle	speed limitat Note changed to ) rev/min cm/1000 strokes 2	speed limitat Note (104°F) Note (changed to ) rev/min 3 (cm²/1000 strokes 5 (cm²/1000 strokes 7 (cm²/1000 strokes 5 (cm²/1000 strokes 7 (cm²/1000

Checking values in brackets

\* 1 mm less control rod trave than col 2

10.85

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 PEN 6,1p1

1. Edition

En

PES 6 MW 100/320 RS 1119-2 RSV 325-1400 MW 2 A 314-1 0 403 476 038

supersedes compaNolvo-Penta TD 61 A 147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,50-2,60 (2,45-2,65)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm (2)	cm <sup>1</sup> /100 strokes 3	100 strokes 4	mm 2	cm·/100 strokes 3	mm 6
1000	10,9+0,1	8,7-8,9	0,35 (0,6)			
325	6,0-6,1	1,2-1,6	0,35(0,55)			
					1	c

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	le d in		Control- tever deflection in degrees 7  Lower rated s  Control travel travel mm rev/min mm		Control rod travel mm	3 to	rque control Control rod travel mm
loose	800	0,3-1,0				ca. 17	325 325	5.5-5.6 6,0-6,1		
ca. 51	1505-1	450=10,0 535= 4,0 ,3-1,7					100	min. 19		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	il load stop	Rotational- speed limitat	39 F	uel delivery paracteristics	Starting (	fuel delivery 5	4a tdle stop	
Test oil to rev/min 1	emp 40 C (104"F) cm <sup>1</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min 8	Control rod travel mm
LDA 1000	0,9 bar 87,0-89,0 (85,0-91,0)		LDA 500		100	140-160 (137-163)		
	(32,52				325	12,0-16,0 (9,5-18,5	)	

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz. Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprime en Republique Fédérale d'Allemagne par Robert Bosch GmbH.

H23

Test at n =

550

rev/min decreasing pressure - in bar gauge pressure

13
41
<u>SS</u>
Tes

Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = ba	r Gauge pressure = bar	mm (1) .
RS 119-2 with MW 2 A 314-1	0	0,9 0,22 0,33	9,4-9,5 10,9-11,0 9,6-9,7 9,8-9,9

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 MB 6,0 d 1

1. Edition

En

PES 6 MW 100/720 RS 1124 RSV 350-1300 MW 1 A 316 Daimler-Benz compan 0M 366 A b 403 476 027 engine 125 kW -5-3-6-2-4 je 60° All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers **A. Fuel Injection Pump Settings** mm (from BDC) RW = 9,0 - 12,0 mm

Testoi-15

	(5)	,05-3,057				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>1</sup> / 100 strokes	mm 2	cm1/100 strokes	mm 6
1300	10,7-10,8	8,0-8,2	0,35(0,6			
350	7,2-7,4	0,8-1,2	0,35(0,5			
1700			0,5 (0,7		¢	
Fuel	injection t	est tubing 1 6	<b>750 008</b>			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed	rev/min	Interm	ediate rate	ed speed	4	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0				ca.16	350	7,3	970	10,8-10,9
ca. 58	1340-13 1355-13	4,0 350 = 9,7 385 = 4,0 130 = 4,0) 3-1,7					350 445-505	7,2-7,4 2,0	850 750	11,7-11,9 12,3-12,4

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-foad stop		6 Rotational- speed limitat		uel delivery naracteristics	Starting t	Starting fuel delivery 5 4a Idle		
Test oil to rev/min 1	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm 1/1000 strokes	rev/min	Control rod travel mm
1300	80,0-82,0 (78,0-84,0)		700	80,0-82,0 (78,0-84,0)	100	80,0-90,0 (77,0-93,0	)	0,5-1,0 mm
			825	80,5-82,5 (77,5-85,5)	350	8,0-12,0 (7,0-14,0	7	efore st

Checking values in brackets

\* 1 mm less control rod travel than col 2

WPP 001/4 MB 6,0 d

1. Edition

PES 6 MW 100/720 RS 1124 RSV 350-1200 MW 1 A 316-1 0 403 476 029

supersedes company Daimler-Benz OM 366 A 110 kW

1-5-3-6-2-4 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,65-3,85)

mm (from BDC)

RW = 9.0 - 12.0 mm

En

Rotational speed rev/min	Control rod travel	Fuel delivery cm /100 strokes 3	Difference cm <sup>1</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm //100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,8-9,9	7,6-7,8	0,35(0,6)			_
350	6,8-6,9	1,0-1,4	0,35(0,5)			
700	10,4-10,5		0,5 (0,7)			
900 Fuel inj	10,1-10,3 ection test		50 008			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm 9	rque control Control rod travel mm
loose		0,3-1,0 4,0				ca.16	350 445-505	6,8-6,9 2,0	9,8-9,9 10,8-10,9 10,4-10,6
ca. 56	1255-12	250 = 8,8 285 = 4,0 330 = 4,0) 3-1,7							

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>C</b>	uli-load stop	6 Rotational- speed limitat	33 F.	uel delivery naracteristics	Starting fuel delivery 5 4a Idle stop			
Test oil temp 40°C (104°F) rev/min cm*/1000 strokes 1 2		Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm /1000 strokes 7	rev/min 8	travel mm
200	76,0-78,0 (74,0-80,0)		700	72,0-74,0 (70,0-76,0)	100	80,0-90,0 (77,0-93,0	<b>j</b> )	0,5-1,0 mm
			900	76,0-78,0 (73,0-81,0)	350	10,0-14,0 (9,0-15,0	4	efore st

Checking values in brackets

\* 1 mm less control rod travel than col 2

40

WPP 001/4, MB 5,7 a 13 1. Edition

supersedes.

En

PES 6 MW 100/720 RS 1125-1 RSV 600-1300 MW 0A 320 0 403 476 049 1-5-3-6-2-4 je 60°

company Daimler-Benz engine OM 362 LA

134 kW

Fuel injection test tubing 1 680 750 008
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,15-3,35)

mm (from BDC)

RW 9,0 - 12,0 mm

Testoil-ISO 4113

Rotational speed	Control rod travel	Fuel delivery	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm (2)	3	4	2	3	6
1280	11,8-11,9	9,2-9,4	0,35(0,6)			
600 800	5,6- 5,7 11,8-11,9	1,0-1,4	0,35(0,5) 0,5 (0,7)			
			•			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	ection mm mm rev/min		Interm	ediate rate	ed speed	Control- lever deflection in degrees 7			rev/min	rque control Control rod travel mm
loose	800	0,3-1,0	1	<b>!</b>		ca.16	600	5,6-5,7		
ca.59							100	min. 19		
2a	1400-14	340=10,8 130= 4,0 ),3- 1,7								

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel.

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	6 Rotational- speed limitat		uel delivery paracteristics	Starting t	fuel delivery 5	4a Idle stop		
-		Note: changed to) rev/min 3	rev/min	min cm <sup>9</sup> /1000 strokes		rev/min cm²/1000 strokes		Control rod travel mm 9	
1280	92,0-94,0 (90,0-96,0)		800	91,0-95,0 (89,0-97,0)	100	80,0-90,0 (77,0-93,0)			
					600	10,0-14,0 (8,0-16,0)			
Note:	Test elec. un	locked start	ng fu	el delivery (EE	\$) wit	n 24 Volts			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MB 3.71-1

1. Edition

PE 6 MW 100/720 RS 1126 RO 300/1250 MW 12-1 0 403 546 006 1-5-3-6-2-4 je 60°

supersedes -

company: Daimler-Benz

OM 360 A 155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**Fuel delivery** 

cm<sup>3</sup>/100 strokes

#### A. Fuel Injection Pump Settings

3,80-3,90 Port closing at prestroke (3,75-3,95)

Rotational speed

1250

300

750

Control rod

12,4+0,1

8,3-8,4

12,4+0,1

En

,75-3,95)	mm (from BDC)	RW = 9 - 12	2 mm	
uel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
3	4	2	3	6
9,95-10,15	0,35(0,6			
1,35-1,75	0,35(0,5	3)		
		1		

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings** 

Checkin	('/)		cifications (4)				(~)	Torque control  Control rod			
rev/min	Control rod travel n:m 2	rev/min	Control rod travel rnm 4	Control rod travel rom 5	rev/min 6	rev/min 7	Control rod travel rnm 8	rev/min 9	travel mm	rev/min	travel mm
650	13,1-13, VH 46°	9 650	13,5	11,4 4,0 0-1	1295-1310 1395-1425 1550			300 220 395-4	8,3-8,4 min.10,4 35 = 2,0		

Torque-control travel on flyweight assembly dimension a =

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np 40°C (104°F)	(2) Contro	rod stop	Sa) Fuel del	ivery characteristics	<b>3</b> b	Starting f Idle spee	uel delivery d i Control
rev/min	cm <sup>3</sup> /-1000 strokes	rev/mir	1	rev/min 4	cm <sup>3</sup> /-1000 strokes		rev/min 6	rod travel cm <sup>3</sup> /1000 strokes / mm 7
1250	99,5-101,5 (97,5-103,5)		500	750	93,0-97,0 (91,0-99,0)		100 300	125,0-135,0 (122,0-138,0) 13,5-17,5 (11,0-20,0)

Checking values in brackets

WPP 001/4 MB 5.7a14

1. Edition

PES 4 MW 100/720 RS 1127 ROV 300-1300 MW 48-1 0 403 444 110 1-3-4-2  $0-90-180-270 \pm 0.50 (0.75)$  supersedes

Daimler-Benz OM 364 A

85 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

3,70-3,80 mm (from BDC) RW = 9 - 12 mm Port closing at prestroke (3.65 - 3.85)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,7+0,1	8,3-8,5	0,35 (0,6			
300	7,9-8,0	1,0-1,4	0,35 (0,5			
750 600	12,0+0,2 12,5+0,		0,5 (0,7 0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed	_	Sliding	leeve travel
Degree of deflection of control lever	rev/min Control rod trave mm	Control rod travel mm rev/min 3	(a) (2a)	deflection	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min	0
max.	1330 1550	15,2-17 0 - 1,	•				ca. 21	100 300	min. 9,5 7,9-8,0		
ca. 54	10,7 4,0	_					<b>39</b>	330-0	500		

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten rev/min		Rotational-speed (2b) limitation intermediate speed rev/min			Starting Idle switchin	ng point	Torque- travel	Control 5  Control rod travel
1	2	3	4	5	6	7	В	9
1300	83,0-85,0 (81,0-87,0)	1340-1350 *	750 600	80,5-83,5 (78,0-86,0) 82,0-84,0 (80,0-86,0)	100 300 100-	80,0-90,0 (77,0-93,0) 10,0-14,0 (8,0=16,0) 230 (80-250)	600 750 950	11,7+0 12,5+0 12,5+0 11,7+0 12,5+0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.85

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**J**5

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WPP 001/4 MB 6,0 d 7

En

1. Edition

Testoil-150 4113

PES 6 MW 100/720 RS 1130 RSV 300-1150 MWOA 318 U 403 476 037 1-5-3-6-2-4 je 60° supersedes =

company Daimler Benz engine OM 366 A 125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

3,70-3,80 (3,65-3,85)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	fuel delivery	Spring pre tensioning storque control valves
rev/min 1	mm 2	cm //100 strokes 3	100 strokes	mm 2	cm <sup>-/</sup> 100 strokes 3	mm 6
1280	11,0-11,2	8,2-8,4	0,35 (0,6)			
300 750	6,9-7,0		0,35 (0,5) 0,5 (0,7)			
Fuel i	njection tes	t tubing 1 680	750 008			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Uppe	er rated speed	rev/min	Interm	ediate rate	d speed	(1)	Lowe	rated speed	11 3 /	rque control
Degree of deflection	Control rod travel	Control rod travel				Contro'		Control red travel	1	Control rod travel
of control lever	mm 2	mm rev/min	4	5	6	deilection in degrees 7	rev/min 8	9	rev/min 10	11
loose	800	0,3-1,0				ca. 29	300	6,9-7,0	1280	11,0-11,2
Ì							100	min. 19	750 825	11,7-11,8 11,4-11,6
a. 59	1380-14	30 = 10,0 10 = 4,0 0,3-1,7							625	11,4-11,0

The numbers denote the sequence of the testSet idle-speed auxiliary spring at 2 mm control-rod travel,

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b) Full-load stop		6 Rotational speed limitat		Fuel delivery characteristics		luel delivery 5	4a Idle stop		
ı	mp 40°C (104°F) cm1/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm/1000 strokes 5	rev/min 6	cm <sup>-/</sup> 1000 strokes 7	rev/min 8	Control rod travel mm 9	
	82,0-84,0 (80,0-86,0)		750	80,0-82,0 (77,0-85,0)	100	80,0-90,0 (77,0-93,0			
					300	10,0-14,0 (8,0-16,0)			

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.85

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

**J6** 

1. Edition

. . 47

Testoil-ISO

PES 6 MW 100/720 RS 1131 ROV 300-1300 MW 67 0 403 446 168

1-5-3-6-2-4 je 60° Fuel injection test tubing 1 680 750 008 supersedes -

Daimler-Benz company: OM 366 LA engine 150 kW

All test specifications are valid for Bosch Fuel injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at pres	itroke (	3,65-3,85)	mm (from BDC)	RW = 9,0 - 12,0 mm					
Rotational speed		Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)			
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6			
1300	11,9+0,1	9,3-9,5	0,35(0,6)						
300 600 500	6,1-6,2 11,9+0,1 10,1+0,1		0,35(0,55 0,5 (0,7)						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediat	rated sp	eed	Lower rated	speed	4	Sliding s	leeve travei
deflection	rev/min Control rod travel	Control rod travel	deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever 1	mm 2	rev/min (2)	lever 4	rev/min 5	6 (4)	lever 7	rev/min 8	mm (3) 9	rev/min 10	mm 11
max.	1340 1550	15,2-17,8 0,0-1,0				ca. 15		min.7,6 6,1-6,2		
ca. 52	10,9 4,0	1340-1350 1440-1470				350 <i>-</i> 550				
						<b>3a</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed		Fuel delivery characteristics 5a high idle speed 50		fuel delivery 6	Torque- travel	Control Co
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1300	0,7 bar 93,0-95,0	1340-1350*	LDA 600	0,7 bar 85,0-89,0	100	80,0-90,0 (77,0-93,0)		
	(91,0-97,0)			(83,0-91,0)	300	10,0-14,0 (7,5-16,5)		
			LDA 500	0 bar 52,0-54,0 (50,0-56,0)		l		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testatn =

500

rev/min decreasing pressure – in bar gauge pressure

MB 6,0 d 11

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 1131 with MW 67	0,37	0,47 0 0,70	10,5-10,6 11,4-11,7 10,1-10,2 11,9-12,0

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 PEN 6.1m

1. Edition

En

supersedes ' Volvo-Penta company TD 61 ACE engine 112 kW

PES 6 MW 100/320 RS 1132 RSV 300-1050 MW 4 A 308-2 0 403 476 043

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,90-3,00 (2.85-3.05)

mm (from BDC)

•	2,00-0,00/				
Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque control valve)
mm (2)	cm V100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm <sup>-</sup> /100 strokes	mm
2	3	4	2	3	6
10,8+0,1	8,5-8,7	0,35 (0,6)			
6,1-6,2	1,2-1,6	0,35 (0,55	1		
	mm 2 2 10,8+0,1	travel cm //100 strokes 2 cm //100 strokes 3 10,8+0,1 8,5-8,7	travel	travel	travel

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	r rated speed	l rev/min	Intern	nediate rati	ed speed	(4)	Lowe	r rated speed	(3) 10	rque control
Degree of deflection of control fever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	1		<del></del>	ca. 29	300	5,6-5,7		
							300 100	6,1-6,2 min. 19		
ca. 69	1140-1	100 = 9,8 170 = 4,0 0,3-1,7					100	111111111111111111111111111111111111111		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Fu	ill load stop	Rotational- speed limitat				uel delivery 5	4a Idle stop		
Test oil to rev/min	cm//1000 strokes	Note changed to ) rev/min	rev/min	cm*/1000 strokes	rev/min 6	cm/1000 strokes	rev/min 8	Control root travel mm	
1000	85,0-87,0 (83,0-89,0)				100 300	140-160 (137-143) 12,0-16,0 (9,5-18,5			

Checking values in brackets

\* 1 mm less control rod travel than col 2

JJ

WPP 001/4 PEN 6,1p

1. Edition

En

PES 6 MW 100/320 RS 1132 RSV 325-1400 MW 2 A 314-1 0 403 476 046 1-5-3-6-2-4 je 60 ° Testow-SO Port closing at prestroke

supersedes companyolvo-Penta engine TD 61 A 147 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 2,90-3,00

(2.85-3.05)

mm (from BDC) RW 9-12 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm1/100 strokes 3	Difference cm <sup>1</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,9+0,1	8,7-8,9	0,35 (0,6)	)		
325	6,0-6,1	1,2-1,6	0,35(0,55)			
500	9,5-9,6					

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

(1) Uppe	er rated speed		Interme	ediate rate	d speed	4	Lowe	rated speed	I ( U /	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	travel mm
loose	800	0,3-1,0		_ <u></u>		ca.22	325	5,5- 5,6		
ca.58	1530-1	450 = 10,0 550 = 4,0 0,3-1,7					325 100	6,0-6,1 min. 19		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b) Full-load slop			Rotational- speed limital  3a Fuel delivery characteristics			Starting fuel delivery 5 4a Idle stollar			
Test oil te rev/min	emp 40°C (104°F) cm <sup>1</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm 1/1000 strokes	rev/min	cm /1000 strokes 7	rev/min 8	Control root travel mm	
	0,9 bar 87,0-89,0 85,0-91,0)		LDA 500	0 bar 50,0-52,0 (48,0-54,0)	100 325	140-160 (137-163) 12,0-16,0 (9,5-18,5)			

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.85

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Alfemagne par Robert Bosch GmbH.

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

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Pump/governor	Setting	Setting		Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure = ba	r mm (1) .
RS 1132 with MW 2 A 314-1	0	,	0,22 0,32 0,90	9,5-9,6 9,7-9,8 9,9-10,0 10,9-11,0

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

311

40

WPP 001/4 PEN 6,1 o

1. Edition

En

PES 6 MW 100/320 RS 1132 RSV 325-1250 MW 2 A 314-2 0 403 476 039 1-5-3-6-2-4 je 60°

supersedes companyVolvo Penta engine TD 61 AW 132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,85-3,05)

mm (from BDC)

RW 9-12 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>1/100</sup> strokes 3	Difference cm '/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm*/100 strokes 3	Spring pre-tensioning (torque-control valve)
700	11,3+0,1	9,5-9,7	0,35(0,6)			_
325	5,6-5,7	1,2-1,6	0,35(0,55			
700	9,8-9,8					
1						

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

Uppe Degree of deflection of control lever	) Mavei Mavei				Control- lever deflection in degrees		Control rod travel mm rev/min		rque control Control rod travel mm	
loose	800	0,3-1,0		]-	<u> 1º </u>	ca. 20	325 325 100	5,1-5,2 5,6-5,7 min. 19		
ca. 50	1360-1	300 = 10,3 390 = 4,0 0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

II-foad stop	6 Rotational speed limitat			Starting f	uel delivery 5	4a) Idle stop		
cm / 1000 strokes	Note changed to ) rev/min 3	rev/min 4	cm <sup>2</sup> /1000 strokes 5	rev/min 6	cm <sup>2</sup> /1000 strokes 7	rev/min 8	Control root travel mm	
0,7 bar 95,0-97,0		LDA 700	0 bar 68,5-70,5	100	140-160 (137-163)			
(93,0-99,0)			(66,5-72,5)	325	12,0-16,0 ( 9,5-18,5			
	mp 40°C (104°F) cm/1000 strokes 2 0,7 bar	speed limitat Note changed to ) rev/min 3  0,7 bar 95,0-97,0	speed limitat Note changed to ) rev/min 3	speed limitat Note changed to ) rev/min 2 cm*/1000 strokes 2 3 characteristics rev/min 2 cm*/1000 strokes 5 cm/1000 strokes 5 LDA 0 bar 700 68,5-70,5	speed limitat Note characteristics rev/min cm/1000 strokes 2 3 4 5 6 100 100 1000 1000 1000 1000 1000 10	speed limitat Note changed to rev/min 2 cm*/1000 strokes 2 changed to rev/min 3 rev/min 2 cm*/1000 strokes 5 rev/min 2 cm*/1000 strokes 6 7  LDA 0 bar 100 140-160 (137-163) (66,5-72,5) 325 12,0-16,0	speed limitat Note Characteristics rev/min cm/1000 strokes 2	

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.85

**BOSCH** 

PEN 6,1 0

Test at n =

700

rev/min decreasing pressure - in bar gauge pressure

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Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure =	bar Gauge pressure ≈ ba	ar mm (1) .
RS 1132 with MW 2 A 314-2	0	0,42 0,30 0,70	9,8-9,9 11,1-11,2 10,2-10,3 11,3-11,4

Notes.

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

WPP 001/4 PEN 6,11

En

1. Edition

supersedes -Volvo-Penta company TD 61 AW engine 125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

PES 6 MW 100/320 RS 1135

RSV 325-1250 MW 2 A 308-3

Port closing at prestroke

0 403 476 048

\*\$

2,90-3,00

mm (from BDC) RW = 9-12 mm

	(-,-	,,								
Rotational speed			Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)				
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm /100 strokes	mm				
1	2	3	4	2	3	6				
800	11,0+0,1	8,5-8,7	0,35 (0,6)							
325 1000	8,7-8,8 11,0+0,1	1,7-2,1	0,35 (0,55 0,5 (0,7)							

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	intermed	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	rque control Control rod travel mm
loose	800	0,3-1,0				ca. 24	325 100	8,7-8,8 min. 19	
ca. 52	1340-1	300 = 10,0 370 = 4,0 0,3-1,7							

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Full-load stop		_	speed limitat Characteristics			Starting fuel delivery 5		
Test oil te rev/min 1	cm /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm*/1000 strakes 5	rev/min	cm/1000 strokes 7	rev/min 8	Control ro travel mm
	85,0-87,0 83,0-89,0)		100	87,5-91,5 (85,5-93,5)	100 325	150-160 (147-163) 17,0-21,0 (15,0-24,0		
						h 13,0-24,0		

Checking values in brackets

\* 1 mm less control rod travel than col 2

WPP 001/4 PEN 6,1p3 En 1. Edition

PES 6 MW 100/320 RS 1136 RQV 350-1100 MW 54-2 0 403 446 167 supersedes companylolvo engine. TD 61 111 kl

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at pre	stroke	(2,95-3,15)	,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm							
Rotational speed   Control rod   Fuel delivery   travel		Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)					
rev/min 1	mm 2	cm <sup>3</sup> /1 <b>00 s</b> trokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6				
700	12.3+0.1	10.8-11.0	0,35(0,6)							
300 1000 700	6,3-6,4 12,3+0,1 10,9+0,1	1,6-2,0	0,35(0,5) 0,35(0,7)							

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed	A	Intermediate	e rated sp	eed	Lower rated	speed		Clidian	Janua traval
Degree of deflection	rev/min Control rod trave	Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control	effection Control rod		leeve travel	
15791	mm	rev/min (2a	lever	rev/min	mm (4)	lever	rev/min	mm ③	rev/min	mm
<u> </u>	2	3	4	5	6	7	8	9	10	11
max.	1150 1350	15,2-17,8 0-1,0				ca.16	100 350	min.7,8 6,3-6,4		
ca.48	11,0	1140-1150 1200-1230				370-450				
						<b>3</b> 9				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Control-ro	portrol-rod stop est oil temp. 40°C (104°F)  intermediate speed		high idle :	el delivery characteristics (5e) th idle speed (5b)		fuel delivery 6	Torque- travel	Control Control rod	
rev/min	c/n³/1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strakes	rev/min	mm	
P	2	3	4	5	6	7	8	9	
LDA 700	0,7 bar 108,0-110,0 (106,0-112,0	1140 <b>–</b> 1150* )	LDA 1000 LDA 700	0,7 bar 109,0-113,0 (107,0-115,0) 0bar 82,0-84,0 (80,0-86,0)		140-160 (137-163) 16,0-20,0 (14,0-22,0)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12,85

PEN 6,1p3

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

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Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1) .
RS 1136 with MW 54-2	0,3	0,45 0 0,70	11,1-11,2 12,0-12,3 10,9-11,0 12,3-12,4

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

WPP 001/4 FIA 13.8 u

1. Edition

PE 6 P 120 A 720 RS 167 Testoil-ISO 4113 Komb.-Nr. 9 400 097 200 RSV 350-1000 P 1/378 R

supersed€s

company engine

Fiat 8210.02

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0 - 2,1 (1,95-2,15)

mm (from BDC)Cy1.1

Rotational speed	Control rod	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	10,8+0,1	16,6-16,8	0,5 (0,9)			
350	6,9-7,1	1,5-2,1	0,8 (1,2)			
		<u> </u>				1
					1	

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

Degree of deflection of control lever	crated speed Control rod travel mm	Control rod travel mm rev/min	Interme	diale rated	speed	Control- tever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800 x =	0,3-1,0 4,5	-	-	•	ca.25	350 100	6,5 min.19,0	500	10,8-10,9 10,8-11,0 11,2-11,4
ca.53	9,8 4,0 1200	1040-1050 1080-1110 0,3-1,7			. <u> </u>		350 390-45	6,9-7,1 0 = 2,0	400	11,2-11,4

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	6 Rotational- speed limitat	33 Ft	uel delivery naracteristics	Starting (	tuel delivery 5	<b>4a</b> Id	e stop
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>1</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm³/1000 strokes	rev/min 6	cm /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	166,0-168,0 (163,0-171,0)	1040-1050*	500	127,5-133,5 (124,5-136,5)	100	270,0-290 (266,0-294		-
					350	15,0-21, (10,0-24,		

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.85

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MB 11,0 b 8. Edition

PES 6P 100A 820LS 264 Testoil-ISO 4113

RQ300/1100 PA 327R (1) RQ 300/1100 PAV 15287 (3)

RQ 300/1100 PA 327 R (2)

supersedes 10.83 company Daimler-Benz OM 407 h 132,4kW (180PS) (1 u. 1)

154.5kW (210PS) (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2.75 - 2.95)

LS 264 Z

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11.2-11.3	9,0 - 9,2	0,3(0,6)	12,7-12,8	10,9 - 11,1	
300	7,5-7,7	0,7 - 1,3	0,3(0,5)	7,5-7,7	0,8- 1,2	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RO - 327R (1)

	g of slider	$\bigcirc$	Full-load	•	•		idle spe	•			Torque (	
PRG che rev/min 1	Control rod travel	U	Setting por rev/min 3	Control rod travel rom 4	Test spec Control and travel mm 5	rev/min	Setting previous	Control red travel	Test spe rev/min 9	cifications 5 Control rod travel mm	rev/min 11	Control rod travel mm
500	13,8-14	,6	500	14,0	10,2	1145-1160	300	7,6	100	min.9,6	-	-
					4,0	1200-1230			300	7,5-7,7		
			•		1350	0 - 1,0			370-4	10= 2,0		
orana-a	ontrol travel								145-1	160 min <sup>-1</sup>		1 mm less contr

**Torque-control travel** on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	lelivery on control lever np. 40°C (104°F)	2	Control rod stop	3	Fuel delive	ery characteristics	Starting f	uel delivery d (6 ! Control
rev/min 1	cm³/-1000 strokes 2		rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	rod travel cm <sup>3</sup> /1000 strokes / mm 7
1100	90,0 - 92,0 (88,0 - 94,0)		500		•	-	100	135,0-155,0 (1 <b>3</b> 1,0 <b>-</b> 159,0)

Checking values in brackets

400- 430 =2,0

**(**2

Checkin	g of slider	Full-load	speed re	egulation		idie spe	ed regul	ation		Torque	control
		Setting p	oint	Test spe	cifications	Setting	point	Test sp	ecifications	l	
rev/min 1	Control rod travel mm 2	rev/min 3	Control red travel rnm 4	rev/min 5	Control rod travet mm 6	rev/min 7	Control red travel mm	rev/min	Control rod travel mm 10	rev/mir 11	Control rod travel mm 12
500	13,8-14,6	500	14,0	11,7 4,0 1350	_	<b>b</b>	7,6	100	min.10,1	•	•
				ارر.	0 - 1,0			300	8,5-8,7		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	felivery on control lever mp. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting fuel delivery		
rev/min 1	cm³/-1000 strokes 2	rev/min , 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm <sup>3</sup> /100 strokes 7	
1100	109,0 - 111,0 (107,0 - 113,0)	500	-	-	100	135,0 - 155,0 (131,0-159,0)	

Checking values in brackets

Testoil-ISO 4113

#### **B.** Governor Settings

#### ..264 mit RQ..PAV 15287 (3)

Checkin	g of slider	Full-load :	speed re	gulation		idie spec	ed regula	ition		Torque control		
rev/min	Control rod travet mm 2	Setting po rev/min 3	Control rad travel		cifications Control rod travel mm 6	Setting prev/min	Control red travel	·	_	ev/min	Control rod travel mm	
600	13,0-14,0	600	13,5	10,2 4,0	1145-1160 12 <b>1</b> 5-1245	300	7 <b>,</b> 5	<b>300</b>	min. 9,0 7,4-7,6 10=2,0mm	,		

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 1145-1160 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop	Control rod stop Fuel delivery characteristics Starfing fuel delive			uel delivery I
rev/min	cm³/-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6_	cm <sup>3</sup> /100 strokes
1100	90,0 - 92,0 (88,0 - 94,0)	500	-	-	100	.135,0 - 155,0 (131,0 <b>-</b> 159,0)

Checking values in brackets

En

40

WPP 001/4 DEE 7,6 a 3

1. Edition

PES 6 P 110 A 720 RS 361 RSV 600-

RSV 600-1150 P 2/480

supersedes company

engine

John Deere 6466 A

170,0 kW

Komb.-Nr. 9 400 231 076

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,75-2,85 (2,70-2,90)

mm (from BDC)

RW = 9,0 - 12,0 mm

En

Rotational speed	Control rod travel	Fuel delivery	Difference	Control roti travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm7100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm /100 strokes	mm
1	2	3	4	2	3	6
1100	12,0+0,1	16,3-16,5	0,4(0,75)			
600	5,4-5,6	2,2-2,8	0,4(0,75)			
	<i>*</i> \		ļ. ļ			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	rated speed Control rod travel mm		Intermed	iate rated	speed 6	Control- lever deflection in degrees 7		rated speed  Control rod  travet  mm  9	9	rque control  Control rod  travel  mm
loose	800 x =	0,3-1,0	-	-	-	ca.25	600 600	5,0 5,4-5,6	950	11,9-12,1 12,0-12,4
ca. 46		1145-1155 1220-1250 0,3-1,7			···		730-790	=2,0	850	12,3-12,4

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		6 Rotational- speed limitat	uel delivery naracteristics	Starting fuel delivery 5			4a Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>2</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm / 1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1100	162,5-164,5 (159,5-167,5)	1145-1155*	850	170,0-176,0 (168,0-178,0)	100 1200	160,0-180 at contro 20,0-21,0 mm 55,0-65,0 (53,0-67,0	-rod	-	

Checking values in brackets

**BOSCH** 

<sup>\* 1</sup> mm less control rod travel than col 2

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 DAF 11,6 i 7

3. Edition

PE 6 P 120 A 320 RS 372-1 Y Komb.-Nr. 0 401 846 473

RQ 250/1100 PA 417 R

supersedes 5,85

Values only apply to test nozzle-and-holder assembly 019 1 688 901 019 and fuel-injection test tubing 1 680 750 067 company: DAF **DKX 1160** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Total Cooling at picos	- CRO	(2,/5-2,95)				
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,4+0,1	18,4-18,6	0,5(0,90)			
250	6,5-6,7	1,4-2,0	0,8(1,2)			
Port closin		rence = 0,9-1,0 21 nm	mm betw	een contr	ol-rod travel S	mm and

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

on flyweight assembly dimension a =

Checkin PRG che	g of slider rck (1)	Full-load : Setting po		•	cifications (4)	idle spe	•		cifications (5)	Torque (	control 3
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel rricri 4	Control red travel rnm 5	rev/min 6	rev/min 7	Control rod travel rmm 8	rev/min 9	Control rod travel	rev/min	Control rod (
700	15,6-15,4	700	16,0	10,4 4,0 1350	1135-1150 1200-1230 max. 1,0		6,6	100 250 455-	min.7,4 6,5-6,7 495 = 2,0	850 1100	11,4-11,5 11,3-11,5
lorgue-c	ontrol travel		0					1135-	1150 min <sup>-1</sup>		1 mm less contro

#### C. Settings for Fuel Injection Pump with Fitted Governor

	delivery on control lever np. 40°C (104°F	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting fuel delivery Idle speed Control		
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/ mm 7	
LDA 850	0,7 bar 183,5-185,5 (180,5-188,5)	-	LDA 600	0, bar 135,5-137,5 (132,5-140,5)	100	315,0-355,0 (311,0-359,0) = 19,5 - 21,0 mm RW	

Checking values in brackets

11.85

rod travel

J21 BOSCH

. 2 -

Testat n -

600

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 372-1Y + RQPA 417 R	0,70	0 0,37 0,33	11,4-11,5 10,0-10,1 11,0-11,1 10,4-10,8

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

WPP 001/4 DAF 11,6 k 2 5. Edition

En

PE 6 P 120 A 320 RS 372-1 Y

RSV 250-1100 P5/458 R

supersedes 5 • 84

Note VDT-I-420/114!

company DAF

DKX 1160 engine

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

243 kW Komb.-Nr. 0 401 876 261

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,8-2,9 (2,75-2,95)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm1/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm·/100 strokes	mm
1	2	3	4	2	3	6
850	11,4+0,1	18,3-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			
			ł			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

K • J · ·	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	11 5 7	rque control   Control rod   travel   mm
loose	800 x =	0,3-1,0 5,0	-	-	_	ca. 24	250	6,0 6,4-6,6	850 400 300	11,6-11,7 11,6-11,8 11,9-12,4
ca. 54	10,4 4,0 1425	1140-1150 1270-1300 0,3-1,7	•				670-73	0 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Speed			iel delivery iaracteristics	Starting tidle	uel delivery 5	4a Idle stop		
rest oil to rev/min 1	emp 40°C (104°F) cm*/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm //1000 strokes 5	rev/min 6	cm*/1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 850	0,7 bar 183,5-185,5 (180,5-188,5)	1140-1150*	LDA 600	0 bar 135,5-137,5 (132,5-140,5)	100	315,0- 355,0 (311,0- 359,0) = 19,5- 21,0 mm RW	250	6,5	

Checking values in brackets

<sup>\* 1</sup> mm less control rod travel than col 2

Testatn =

600

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 372-1y +P5/458 R	0,37	0,70 0 0,30	11,0-11,1 11,4-11,5 10,0-10,1 10,3-10,7

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

2

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11,1 q 7

5. Edition

PES 6 P 120 A 720 LS 388

RQ 250/1100 PA 509

Komb.-Nrn. 0 402 046 208 = MAN-Nr. 2-7083 0402046209 = MAN-Nr. 2-7066 supersedes 7.84 MAN company:

engine:

D 2566 MK/MKF

206 kW/2200 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings (2,95-3,15)

Port closing at prestroke

mm (from BDC) (V) 6

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm³/100 strokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes	mm 6
750	11.4+0.1	17.8-18.2	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			
					·	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin	g of slider	Full-toad	speed re	gulation	_	idle spec	ed regula	stion	_	Torque o	control
PRG che	ck (1)	Setting po	oint	Test spec	cifications (4)	Setting p	point	Test spe	cifications (5)	1	<b>3</b>
rev/min 1	Control rod travel mm 2	rev/min 3	Control red travel rnm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel rnm 8	rev/min 9	Control rod travel	rev/min 11	Control rod Control
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	100	10,2-10,3
VH :	ca. 49°			4,0 1400	1180-1210 0-1,0			1	6,2-6,4	975 875	10,4-10,6 11,0-11,1
								350-3	90 =2,0	750	11,4-11,5
	<u> </u>	L	0.4	<u></u>	<u> </u>	L	<u> </u>	45 44	60 -:1	<u> </u>	]

Torque control travel on flyweight assembly dimension a =

1145-1160 min-1 Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop 3a	Fuel deliv	ery characteristics	Starting fuel delivery 6		
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	rod travel cm <sup>3</sup> /1000 strokes / mm	
LDA 750	0,7 bar 178,0-182,0 (175,0-185,0)		LDA 650 LDA	0,7 bar 174,0-180,0 0,31 bar	100 250	215,0-235,0 12,0-18,0	
LDA	0,7 bar		500 LDA	134,0-140,0 0 bar	100-17	0 (80-190)	
1100	163,0-169,0 (160,0-172,0)		500	106,0-110,0			

Checking values in brackets

(Col.4-5 inrease by  $\pm$  3 cm<sup>3</sup>)

10.85

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung € 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

## D. Adjustment Test for Manifold Pressure Compensator MAN 11,1 q 7

Testatin =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 PLS 388 +RQPA 509	0,70	0,43 0,31 0	11,4-11,5 10,9-11,1 10,3-10,4 9,2-9,3

Notes

(1) when n

rev/min and gauge pressure =

bar ( = maximum-full-load control rod travel)

-2-

40

WPP 001/4 DAF 11,6 v 3. Edition

En

PE6P110 A 320 RS 407-1

Komb.-Nr. 0 401 876 275

RSV 275-1000 P5/458-3

supersedes 7.84

company

DAF

engine

DKCL 1160 155 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,8 - 2,9
Port closing at prestroke (2,75- 2,95)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	100 strokes	mm	cm 1100 strokes	mm
1	2	3	4	2	3	6
600	12,3+0,1	13,9-14,2	0,4 (0,75)			
275	7,0-7,2	0,9 - 1,4	0,45(0,75)			
					Ī	
	1					

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

1 Uppe	r rated speed		Intermed	diate rated	speed	(4)	Lower	rated speed	17 2 1	rque control
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	••	-	ca.23	275	6,6	600	12,5-12,6
	Х =	= 4,5					275	/,0-7,2	1000	11,1-11,3
ca.48	10,1	1040-1050					675-73	5 = 2,0	750	12,1-12,3
29	4,0 1325	1160-1190	1				<u> </u>		850	11,4-11,7

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(C)	ill-load stop	6 Rotational- speed limital	11061	uel delivery naracteristics	Starting t	luel delivery (5)	4a) Idle stop	
rev/min	emp 40°C (104°F) cm*/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes	rev/min	cm /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 600	0,7 bar 139,0-142,0 (136,5-144,5)	1040-1050*	LDA 1000 LDA 600	0,7 bar 114,5-119,5 (111,5-122,5) 0 bar 136,5-139,5 (133,5-142,5)	100 275	245,0-265 (241,0-269 9,0-14,0 (6,5-16,5	0)	_

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

11.85

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

DAF 11,6 v

-2-

Pump/governor	Setting	Measurement	diminution Control rod travel-
	Gauge pressure ≈ bar	Gauge pressure = bar	difference mm (1)
PE6PRS 407-1	0,70		12,3-12,4
+RSVP5/458-3		0 0,28	12,1-12,2 12,2-12,3

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum-full-load control rod travel)

40

WPP 001/4 DAF 11,6 v 4

1. Edition

En

PE 6 P 110 A 320 RS 407-1 Komb.-Nr. 0 401 876 306 RSV 275-1100 P 5 A 508-6

supersedes

company DAF

engine DKTL 1160 185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Part closing at prestroke (2,75-2,95)

mm (from BDC) RW = 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>1</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> 100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3+0,1	14,1-14,3	0,4(0,75)			
275	7,0-7,2	1,0-1,5	0,45(0,75)			
		i				

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

**Testoil-ISO** 

Degree of deflection of control lever	crated speed Control rod travel mm	f rev/min Control rod travel mm reখ/min	Interme	ediate rate	Control- lever deflection in degrees		rev/min	rated speed  Control rod  travel  mm  9	Torque control Control rod travel rev/min mm 10 11	
oose	800 X = 3	0,3-0,7 ,25	-	•	-	ca.18	275 275 675 74	6,6 7,0-7,2 5 = 2,0	850 400 300	12,5-12,6 12,5-12,7 12,8-13,3
ca.47	11,3 4,0 1350	1135-1145 1275-1305 0,3-1,4					0/3-/4	7 - 2,0	300	%E,0-13,3

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load slop	6 Rotational- speed limitat		uel delivery naracteristics	Starting (	uel delivery 5	(4a) Id	e stop
Test oil te rev/min	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	Control rod travel mm
	0,7 bar 141,0-143,0 138,5-145,5)	1135-1145*	LDA 600	0 bar 137,0-139,0 (134,5-141,5)	100 275	245,0-285, 241,0-289, 10,0-15,0 7,5-17,5)		-

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.85

BOSCH

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## D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 v 4

- 2 -

Test at n =

600

rev/min decreasing pressure – in bar gauge pressure

Gauge pressure = bar Gauge pressure = bar mm (1)  PE 6 PRS 407-1 + RSVP5 A 508-6  0,70 0,30 12,3-12,4 12,0-12,1 12,1-12,2	Pump/governor	Setting	Measurement	diminution Control rod travel difference
+ RSVP5 A 508-6 0 12,3-12,4 12,0-12,1		Gauge pressure = bar	Gauge pressure = bar	mm (1) .
		0,70	_	12,0-12,1

Notes:

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

40

WPP 001/4 MWM 14,4 a 1
2. Edition

En

PE 8 P 120 A 520/5 RS 427 RSUV 300-750 P 10 A 320 Komb.-Nr. 0 401 878 108 1-8-5 -4 - 7 - 2 - 3 - 6 0-30-90-120-180-210-270-300 ° + 0,5 ° (+ 0,75 °)

supersedes 1.83 MWM company D 234-V 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,7)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	mm 2	cm1/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm /100 strokes	mm
750	9,7-9,8	15,9-16,1	0,5 (0,9)	2	3	6
300	5,6-5,8	2,3-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Degree of dellection of control lever	r rated speed Control rod travel mm		Interme	diate rated	speed 6	Control- lever deflection in degrees 7	Lower	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose ca. 55	800 x = 8,7 4,0 950	0,3-1,0 2,75 790-800 800-830 0,3-1,7	•	4	-	ca.21	300 300 320-38	6,1 6,5-6,7 0 = 2,0	750 450 320	9,7-9,8 9,7-9,8 10,9-11,5

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	ill-load stop	6 Rotational speed limitat		uel delivery naracteristics	Starting Idle	fuel delivery 5	<b>4a</b> ) Idi	e stop
rev/min	emp 40°C (104°F) cm /1000 strokes 2_	Note changed to ) rev/min	rev/min 4 ,	cm/1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes	rev/min 8	Control root travel mm
<b>7</b> 50	159,0-161,0 (156,0-164,0)	790-800*	-	<b>-</b> :	-	-	-	<b>-</b>

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

WPP 001/4 MAN 11,4a1 3. Edition

PES 6P 120A 320 LS 429

RQ 250/1100 PA 659

supersedes10,83

Komb.-Nr. 0 402 046 264

company: MAN

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine D 2566 MKUL 235 kW/220 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	ITORA	3,0-3,1 2 <u>95-3 151</u>	mm (from BDC)	Cy1. 6;	RW = 9,0-12,	O mm
Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,0+0,	21,5-21,7	0,5(0,9)			
250	6,3-6,	5 1,2-1,8	0,8(1,2			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Checkin PRG che	g of slider	Full-load : Setting po		•	cifications (4)	idle spec	•		cifications (5)	Torque o	_
rev/min 1	Control rod travel	rev/min 3	Control red travel mma 4	Control rad travel s nm	rev/min	rev/min 7	Control rod travel	rev/min 9	Control rod travel	rev/min	Control rod travel mm
600	19,2-20,	8 600	20,0	10,3 4,0 1300	1145-1160 1180-1210 0-1,0	l .	6,4	250	min. 7,9 6,3-6,5 375 = 2,0	1100	11,3-11, 12,5-12,
	ontrol travel		0,55	mm	Soo	ed recula		45-11	60 min 1		1 mm less contro

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	Fry characteristics	Starting f	
rev/min 1	cm³/-1000 strokes 2	rev/miri 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rad travel cm <sup>3</sup> /1000 strokes / mm
LDA 750	1,0 bar 215,0-217,0 (212,0-220,0)	-	LDA 500	o,29 bar 134,0-140,0 (131,0-143,0)	100	205,0 - 225,0 (201,0-229)
1100	177,0-183,0) (174,0-186,0)		LDA 500	0 bar 111,0-113,0	250	12,0-18,0 (9,0-21,0)
650	206,0-212,0 (203,0-215,0)			(108,0-116,0)		

Checking values in brackets

11.85

Geschältsbereich KH. Kundendienst. Kfz Ausrüstung 4. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Alfemagne par Robert Bosch GmbH.

## D. Adjustment Test for Manifold Pressure Compensator

MAN 11,481

-2-

Test at n

500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1) .
PES 6PLS 429	1,0		13,0-13,1
+RqPA 659		U	9,7-9,8
• •	İ	0,29	10,7-10,8
		0,58	12,4-12,7
		1	
			İ
a company of the comp		<u></u>	<u></u>

Notes

(1) when n

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

**②** 

(1)

A. Car

の作品であ

## Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 9,5 a

6. Edition

PES 5 P 110 A 820 LS 434

RO 300/1100 PA 327-3

supersedes 5.84

Komb.-Nr. 0 402 045 022

1 - 3 - 5 - 4 - 2

Daimler-Benz company: OM 409

je  $72^{\circ} \stackrel{+}{=} 0.5^{\circ} (\stackrel{+}{=} 0.75^{\circ})$ 

engine: 141 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Cv1. 5

	\2	,90-0,10)			Cyle	
Rotational speed rev/min 1	Control rod travei mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,4+0,1	11,8-12,0	0,4(0,8)			
300 600	8,0-8,2	1,2-1,8 C, Sp. 4 u.5	0,4(0,7) 0,6(0,9)			·

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel	Full-load s Setting po rev/min 3	oint Contrat	Test spec	cifications (4) rev/min	tdle spec Setting p rev/min 7	Control red travel		cifications (5) Control rod travel mm	Torque of rev/min	Control rod (3)
600	13,8-14,6	600	14,2	10,5 4,0	1145-1160 1175-1205	300	7,1	300 8	in.10,8 ,0-8,2 15=2,0	-	-
on flywei	control travel			mm	•	eed regula	ation: At		0 min-1		1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor c Test oil ten		Control rod stop (3a)	Fuel deliv	ery characteristics 3b	Starting f Idle spee	uel delivery d Gontrei
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes/ mm 7
1100	118,0-120,0 (115,0-123,0)	-	600	100,0-104,0 (97,0-107,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

WPP 001/4 DAF 11,6 u

5. Edition

PE 6 P 110 A 720 RS 441 Komb.-Nr. 0 401 876 252 RSV 250-1200 P 5/493

supersedes 7.84 DAF company

**DHS 825** engine 184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 2,8-2,9 Port closing at prestroke (2,75-2,95) mm

mm (from BDC)

RW = 9.0 - 12.0 mm

En

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm 1/100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	12,2+0,1	13,7-14,0	0,4(0,75)			
250	5,0-5,2	0,7-1,2	0,45(0,75			

Adjust the fuel delivery from each outlet according to the values in E

## **B.** Governor Settings

	r rated speed	rev/min  Control:rod	Interme	diate rated	speed	<b>(4)</b>		rated speed Control rod	IL G J	rque control   Control rod
Degree of deflection of confic?	travel ਵਮਾਜ	travel mm rev/min				Control- lever deflection	rev/min	travel mm	rev/min	travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	•	***	-	ca. 24	250	4,6	400	12,4-12,5
	X =	5,0					250	5,0-5,2	300	12,6-13,1
ca. 52	11,2 4,0 1500	1240-1250 1330-1360 0,3-1,7					<b>525-</b> 58	15=2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	(3a) Fu	iel delivery paracteristics	Starting fi				
rev/min	emp 40°C (104°F) cm //1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm <sup>4</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
LDA 1000	0,7 bar 136,5-13 9,5 134,0-142,0)	1240-1250*	LDA 600	0 bar 91,5-94,5 (89,0-97,0)		245,0-285 (241,0-289 =19,5- 21,0 mm RW	(0)	***	
					250	7,0-12,0 (4,5-14,5	)		

Checking values in brackets

\* 1 mm less control rod travel than col 2



## D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 u

-?-

Testatn =

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel difference
and white the constraint of th	Gauge pressure = bar	Gauge pressure = bar	mm (1) ,
PE 6 PRS 441 + RSVP 5/493	0,70	0 0,36 0,27	12,2-12,3 10,1-10,2 11,7-11,8 10,8-11,2

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

40

WPP 001/4 DAF 11,6 u 7

1. Edition

En

PE 6 P 110 A 720 RS 441 Komb.-Nr. U 401 876 301

RSV 250-1200 P5 A 509

supersedes companyDAF engine DHS 825 184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95)

mm (from BDG) RW = 9.0-12.0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm/100 strokes	Difference cm <sup>-/</sup> 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve) mm
1 000	12,2+0,1	13,7-13,9	0,4(0,75)	2	3	6
250	5,0-5,2	0,7-1,2	0,45(0,75			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

(1) Uppe	er rated speed	t rev/min	Intermo	ediate rate	d speed	(4)	Lower	rated speed		rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose	800 0	,3-0,7	1 -		-	ca.24	250	4,6	1000	12,4-12,5
	X =	5,0					250 535-5	5,0-5,2 95 = 2,0	400 300	
ca.58	4,0	1240-1250 1330-1360 0,3-1,4								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	33 Fu	iel delivery jaracteristics	Starting f				
rev/min	emp 40°C (104°F) cm /1000 strokes 2	Note. changed to .) rev/min 3	rev/min 4	cm 1/1000 strokes 5	rev/min 6	cm/1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1000	0,7 bar 137,0-139,0 134,5-141,5)	1240-1250*	LDA 600	0 bar 92,0-94,0 (89,5-96,5)	250	245,0-285, (241,0-289 7,0-12,0 (4,5-14,5)	0)	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.85

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany tmprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

## D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 u. 7

- 2 -

Testatn =

600

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 441 + RSVP5 A 509	0,70	0 0,36 0,27	12,2-12,3 10,3-10,4 11,7-11,8 10,6-11,0

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

40

WPP 001/4 DAF 11,6 u 2 3. Edition

En

PE 6 P 110 A 720 RS 441-1

RSV 250-750 P 7/479-1

Komb.-Nr. 0 401 876 270

supersedes 7.84

company DAF

engine DHS 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 - 2,9 (2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>1</sup> /100 %trokes 3	Difference cm <sup>-//</sup> 100 strokes	Control rod travel mm 2	Fuel delivery cm*/100 strokes 3	Spring pre-tensioning (forque-control valve) mm
750 250	11,6+0,1 4,8-5,0	14,,3-14,6 0,9-1,3	0,4(0,75) 0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in E

### **B. Governor Settings**

1 Uppe	r rated speed		interme	diate rated	speed	(4)		rated speed	(3) To	rque control
Degree of deflection	Control rod travel	travel				Control- lever		Control rod travel		Control rod travel
of control	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
<u> </u>	4	3	4	5	6		8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 18	250	4,9	-	-
	X =	4,0					250 250-29	4,8-5,0		
ca. 45	1	790-795				] ~	250-29	0 = 2,0 **		
29	4,0 950	810-825 0,3-1,7								

\*\* Set idle-speed auxiliary spring at 2 mm control-rod travel.

### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	Rotational Speed limital April 6 Fuel delivery characteristics			Starting (	4a Idle stop		
rev/min	emp 40°C (104°F) cm 1/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm/1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min	Control rad travel mm
750	142,5-145,5 (142,0-148,0)	790-795*	-	-	-	<b>-</b>	-	-

Checking values in brackets

\* 1 mm less control rod travel than cot 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

KAS

WPP 001/4 MB 11,4 L 3

5. Edition

PES 6 P 110 A 820 LS 442

ROV 300-1100 PA 594-3

company: Daimler-Benz OM 407

162 kW (220 PS)

Komb.-Nr. 0 402 046 233 0 402 046 301

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	itroke	3,2-3,3 (3.15-3.35)	mm (from BDC)	Cy1. 6;	}	
Rotational speed		Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm³/100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1100	10,940,1	11,3-11,5	0,4(0,8)			
300 600	8,0-8,2	1,4-2,0 C, Sp. 4 u.5	0,4(0,7) 0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper rated s	peed	1		Intermediate	rated sp	eed	Lower rated	speed		01141	
deflection of control	Control rod travel	Control rod travel mm rev/min 3	0	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	Skaing s rev/min 10	mm
max.	1140	15,2-17	7,8	-	•	-	ca. 32		min.9,7 8,0-8,2	250	1,0-1,3 3,9-4,2
ca. 60	9,9 4,0 1300	1140-11 1175-12 0-1,	205				320-45				5,5-5,8 8,1
							39				

Torque control travel s: =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil terr	elivery 1 stop np. 40°C (104°F) 2	intermediate speed	high idle s	very characteristics 5a	idie	fuel delivery 6	Torque- travel	control (5)
rev/min	cm³/1000 strokes .	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	trave! mm
	<del>Z</del>	3	4	5	6	7	8	9
1100	113,0-115,0 (110,0-118,0		600	90,0-94,0 (87,0-97,0)	100	130,0-150,0 (126,0-154,0		-
					į			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.85

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WPP 001/4 DAF 8,3 o 3. Edition

En

PE 6 P 100 A 720 RS 447

RSV 250-1200 P5/493 P5A493 supersede 7 . 84 company DAF

Komb.-Nr. 0 401 876 260

engine DHT 825 162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

3,2 - 3,3 (3,15-3,35)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm /100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,4+0,1	11,9-12,1	0,35(0,6)			
250	5,3-5,5	0,8-1,2	0,35(0,55	)		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

(1) Uppe	er rated speed		Interme	diate rated	speed	(4)	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 x =	0,3-1,0 5,0	-	-	-	ca.24	250	4,9	400 300	11,6-11,7 11,8-12,3
ca.58	10,4 4,0 1530	1240-1250 1325-1355 0,3-1,4					100 250 540-600	min. 7,0 5,3-5,5 = 2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational- speed limitat		Ga Fuel delivery characteristics		uel delivery 5	4a Idle stop	
	emp 40°C (104°F) cm //1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>1/1</sup> 000 strokes	rev/min 6	cm /1000 strakes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 118,5-120,5 (116,5-122,5)	1240 - 1250*	LDA 600	0 bar 92,5-96,5 (90,0-99,0)	100 250	210,0-230 206,0-234 8,0-12,0 (5,5-14,5	0)	-

Checking values in brackets

\* 1 mm less control rod travel than cot 2

11.85



## D. Adjustment Test for Manifold Pressure Compensator 600

DAF 8,3 o

Test at n =

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travet- difference
·	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PEGPRS447	0,32		11,1 - 11,2
+ RSVP5/493		0,70	11,4 - 11,5
		0	10,4 - 10,5
		0,23	10,5 - 10,9

Notes

(1) when n =

rev/min and gauge pressure =

bar ( " maximum full-load control rod travel)

40

WPP 001/4 PEN 7,0 i 2

1. Edition

En

PE 6 P 110 A 320 RS 465

RSV 200-1200 P 1 A 305

supersedes

Komb.-Nr. 0 401 876 313

company engine Volvo-Penta TD 61 G 150,0 kW

All fest specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection, Pump Settings

Port closing at prestroke

3,0-3,1 (2,95-3,15)

mm (from BDC)

; cyl. 1; RW = 9,0-12,0 mm

Rotational speed	Control red travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm1/100 strokes	cm <sup>-</sup> / 100 strokes 4	mm 2	cm/100 strokes	mm 6
700	12,6+0,1	13,4-13,6	0,4 (0,75)			2,4-2,6
200	5,4-5,6	1,6-2,2	0,3 (0,6)			(2,2~2,9)

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Degree of deflection	r rated speed Control rod travel	Control rod travel	Intermed	tiate rated	speed	Control- lever		rated speed Control rod travel	3 10	rque control Control rod travel
of Control lever 1	mm 2	mm:rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	11
loose	800	0,3-0,7	-	•	-	ca.13	200	5,0	-	•
	X =	4,3					200	5,4-5,6		
ca.55	11,6 4,0 1440	1240-1250 1270-1300 0,3-1,4					280-34	0 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ult-load stop	6 Rotational- speed limitat		et delivery paracteristics	Starting f	uel delivery 5	(4a) idi	e stop
Test oil to rev/min 1	emp 40°C (104°F), cm'/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes	rev/min 6	cmV1000 strokes	rev/min	Control rod travel mm
700	134,0-136,0 (131,0-139,0)	-	-	-	-	•	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

10.85

Testoil-ISO 4113

40

WPP 001/4 MAN 11,9 a 13

1. Edition

En

PES 6 P 120 A 720/3 LS 470-2 RQ 300/1100 PA 658-19 Komb.-Nr. 0 402 036 044 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes company:MAN

engine: D 2866 LFZ/330

243 kW/2200 min-1 MAN-Nr. 2-7712

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
750	11,3+0,1	20,7-20,9	0,5(0,9)			
300	4,6-4,8	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che	g of slider	Full-load : Setting po		-	cifications (4)	idle spec	-		cifications (5)	Torque (	control	(3)
rev <i>im</i> in 1	Control rod travel mm 2	rev/min 3	Control red travel mm	Control rad travel mm 5	rev/min 6	rev/min 7	Control rod travel rnm 8	rev/min 9	Control rod travel	rev/min	Control rod travel mm 12	•
600	19,2-20,8	600	20,0	9,5 4,0	1145-1160 1175-1205		4,7	100 300	min. 6,2 4,6-4,8		11,8-11 10,5-10	
VH = 1	max. 46°			1300	0 - 1,0		:		80 = 2,0	875	11,6-11 11,0-11	,8

Torque-control travel on flyweight assembly dimension a =

0,50<sub>mm</sub>

1145-1160 min-1 Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load deligovernor con Test oil temp		Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	
rev/min c	m³/-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control red travel cm <sup>3</sup> /1000 strokes:/ mm
1100 ( 650 (	1,0 bar 207,0-209,0 (204,0-212,0) 199,0-203,0 (196,0-206,0) 206,0-212,0 (203,0-215,0)	•	LDA 500 LDA 500	0,38 bar 184,0-196,0 (181,0-199,0) 0 bar 132,0-134,0 (129,0-137,0)	100	225,0-245,0 (221,0-249,0)

Checking values in brackets

12.85

BOSCH

## D. Adjustment Test for Manifold Pressure Compensator MAN 11,9 a 13 - 2

Testatn =

500 rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 5 PLS470-2 +RQPA 658-19	1,0	0 0,16 0,38	11,3-11,4 8,9-9,1 9,2-9,3 10,5-10,9

Notes

(1) when n =

rev/min and gauge pressure =

bar (\* maximum full-load control rod travel)

Testcil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 CAT 10,5 e

1. Edition

PES 6 P 80 A 720 LS 478 Komb.-Nr. 9 400 087 350

RQV 350/840-900 PA 726-1

supersedes -

company: Caterpillar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotetional speed rev/min	Control rod travel mm	Fuel delivery cm <sup>9</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 atrokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
880	14,1+0,1	19,3-19,4	0,25(0,4)			
350	5,9-6,1	0,9-1,4	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper rated s	speed	1		Intermediate	rated sp	ed		Lower rated	speed			Sliding s	leeve travel
deflection	rev/min Control	ישעשיי	19	Degree of deflection of control		Control r travel	od	Degree of deflection of control		Control re travel	od		0
lever	rod travel	rev/min (	28)		rev/min	mm	(4)	lever	rev/min	mm	(3)	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
max.	925	15,2-17	,2	-	-	-		ca.11	100	min.8,	,0	350	0,5-1,5
ca.66	13,1	910-920							350	5,4-5	,6	500	2,4-2,6
	4,0	940-970						•	500	2,4-3	6	750	
	1000	0-1,0			1			1	<b>780-</b> ε	340 = 2	2,0	850	4,0-4,5
1						l			İ			950	8,6
								39					

Torque control travel a =

#### mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b timitation intermediate speed	Fuel delivery characteristics (5e) high idle speed (5b)		Starting Idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4e	rev/min	cm <sup>3</sup> /1000 strekes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
19	2	3	4	5	6	7	8	9
୪୪୬	193,0-194,0 (191,5-195,5)	910-920 *	500	182,5-184,5 (180,5-186,5	100 350	235,0-255,0 = 17,6-18,6 mm RW 5,4-5,6 mm RW		-

Checking values in brackets

BOSCH

<sup>\* 1</sup> mm less control rod travel than col. 2

40

WPP 001/4 PEN 7,1 a

1. Edition

E:n

PE 6 P 110 A 320 RS 492 Komb.-Nr. 0 401 876 312 RSV 200-1200 P 1 A 305

supersed S Volvo-Penta TJD 71 G engine 165.0 kW

CI-150 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

3,0-3,10 (2,95-3,15)

mm (from BDC)

; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>-y</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm /100 strokes	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	12,5-12,7	0,4 (0,75)			2,4-2,6
200	5,4-5,6	1,6-2,2	0,3 (0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated	speed 6	Control- lever deflection in degrees		rated speed Control rod travel mm	<b>O</b>	rque control Control rod travel mm
loose	800 x =	0,3-0,7	-	-	-	ca.13	200 200	5,0 5,4-5,6	-	•
ca.55 <b>(2a</b> )		1240-1250 1270-1300 0,3-1,4					280-34	0 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

169	ull-load stop emp 40°C (104°F)	Rotational- speed limitat	Rotational- speed limitat 3a Fuel delivery characteristics			uel delivery 5	(4a) Idle stop		
rev/min	cmV1000 strokes	changed to ) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes 7	1_	travel mm 9	
700	125,0-127,0 (122,0-130,0)	1240-1250*	-	<b>-</b>	-	<b>-</b>	•	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2 10.85

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

40

WPP 001/4 PEN 7,1 b

1. Edition

En

PE 6 P 110 A 320 RS 492

RSV 650-750 P 4/421

45

Komb.-Nr. 0 401 876 315

company Volvo-Penta TJD 71 G engine 127.0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2,95-3,15)

mm (from BDC)

; cyl. 1; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm 100 strokes	Spring pre tensioning (torque control valve) mm 6
700	12,6+0,1	13,4-13,6	0,4 (0,75)			2,4-2,6
650	4,9-5,1	1,6-2,0	0,3 (0,6)			(2,2-2,9)
			_			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	1(3)	rque control Control rod travel mm
loose	800	0,3-1,0	-	<u>-</u>	-	ca.33	650 650	6,1	-	-
ca.39		750-755 775-785 0,3-1,7					660-70			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load slop emp 40°C (104°F)	Rotational speed-limitat Note changed to )	edilimitat Characteristics		Starting f Idle	uel delivery 5	da idle stop Control rod travel	
rev/min	cm <sup>1</sup> /1000 strokes 2	rev/min	rev/min 4	cm /1000 strokes 5	rev/min 6	cm //1000 strokes 7	rev/min	mm 9
700	134,0-136,0 (131,0-139,0)	750-755*	-	-	-	-	•	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.85

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz. Ausrustung. 1980 by Robert Bosch GmbH. Postlach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fedérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 SCA 8.0 d

6. Edition

PE 6 P 110 A 720 RS 3034

Komb.-Nr. 0 401 846 709

ROV 200-1200 PA 275 R

supersede3.84 company: Scania DS 804

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

mm (from BDC) RW = 9,0 - 12,0 mm Port closing at prestroke 3.25 - 3.45Rotational speed Control rod travel Spring pre-tensioning (torque-control valve) Control rod Fuel delivery Difference Fuel delivery cm<sup>3</sup>/ 100 atrokes rev/min cm<sup>3</sup>/100 strokes cm<sup>3</sup>/100 strokes mm mm 2,5<sup>±</sup>0,1 600 12.3+0. 11,1-11,3 0.5(0.7)225 5,9-6, 1,5-1,9 (2,2-2,9)0,2(0,4)

Adjust the fuel delivery from each outlet according to the values in [

### **B.** Governor Settings

Upper rated s	peed	1	Intermediate	rated sp	eed	Lower rated	speed		Sliding	sleeve travel
deflection	rev/min Control rod trave	Control rod (a)	Degree of deflection of control	travel deflection tra		Control rod travel	Sildings	0		
	mm	rev/min (2a)	lever	rev/min		of control lever	rev/min	mm (3	<b>1</b>	
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 9	100 225	min.7,4 5,9-6,1	150 500	0,6-0,8 3,8-4,4
ca. 62	11,3 4,0 1500	1240-1250 1370-1400 0-1,0						70=2,0		5,9-6,1 8,4
					Ì	<b>3</b> 8				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed (2b) Fuel delivery characteristics (5e) initiation intermediate speed (5b)		Starting Idle switchir	$\mathbf{O}$	Torque- trævei	control 5	
rev/min	cm <sup>9</sup> /1000 strokes	rev/min 4a	rev/min	rev/min cm³/1000 strokes		rev/min cm³/1000 strakes		travel mm
1	2	3	4	5	6	7	8	9
LDA 600	0,9 bar 111,0-113, (109,0-115,		LDA 1200	0,9 bar 118,5-123,5 (117,0-125,0		190,0-240,0 = 20,0-21,0 mm RW	•	-
			LDA 500	0 bar 81,0-85,0 (79,0-87,0)				

ccking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator SCA 8,0 d

-2-

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control red travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 3034 + RQVPA 27 5 R	0,90	0 0,37 0,26	12,3-12,4 11,0-11,1 12,0-12,1 11,3-11,5

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 6.4.1984
- Start of fuel delivery-engine: 18° v. OT
- Firing sequence, engine : 1-5-3-6-2-4

WPP 001/4 DEE 7,6 g 1

2. Edition

PES 6 P 110 A 720 RS 3083-1

RSV 400-1100 P 2/489

P 2A489

supersede 4.85 John Deere 6466 A

Komb.-Nr. 9 400 231 084

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

3,45-3,55 (3.40 - 3.60)

mm (from BDC)

Rotational speed	Control red travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm1100 strokes	mm
1	2	3	4	2	3	6
1100	10,7+0,1	13,8-14,0	0,4(0,75)			
425	5,1-5,3	1,1-1,6	0,45(0,75)			
Port clos	ing mark cy	1. 1 : 13° aft	er port cl	sing		

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

1 Uppe	r rated speed		Interme	diate rated	speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm .
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	-	=	ca. 25	425	4,7	1100	10,7-10,8
	x =						100	min.19,0	700	11,9-12,2
ca. 49	9,7 4,0 1300	1155-1165 1200-1230 0,3-1,7					425   580 <b>-</b> 64	5,1-5,3 0 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational speed limitat		uel delivery paracteristics	Starting f	uel delivery 5	4a Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm*/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm //1000 strokes 5	rev/min 6	cm /1000 strokes	rev/min 8	Control root travel mm 9	
LDA 1100	0,9 bar 137,5-139,5 (134,5-142,5)	115Š-1165*	LDA 700 LDA 500	0,9 bar 154,0-160,0 (151,0-163,0) 0 bar 103,0-109,0 (101,0-111,0)	100 1200	150,0-170 =20,0-21,0 mm RW 47,0-57,0	<b>)</b>	- /	

Checking values in brackets

\* 1 mm less control rad travel than col 2

Geschaftsbereich KM. Kundendienst: Kfz-Ausrustung. c. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuffgart 1. Printed in the Federal Republic of Germany Imprimé en République Federale d'Allemagne par Robert Bosch GmbH.

## D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 g 1

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) ,
FES 6 FRS 3083- + RSVF2/489	1 0,37		11,3 - 11,4
+ RSV12/489 F2A489		0,20	10,1 - 10,5
:		•	

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

40

WPP 001/4 STE 9.7 c

1. Edition

En

PE 6 P 110 A 721 RS 3102 Komb.-Nr. 0 401 866 700 RSV 250-1200 P 1 A 516

supersedes =

company engine Steyr WD 615.84 191.0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,95)

mm (from BDC)Cy1. 1

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod tråvel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm <b>(2)</b>	cm <sup>1</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm1/100 strokes	mm
1	2	3	4	2	3	6
1200	12,7+0,1	15,4-15,7	0,4 (0,75			
250	7,0-7,2	1,7-2,2	0,45(0,75			
					1	
						İ

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

1 Uppe	r rated speed		Intermed	liate rated	speed	4	Lower	rated speed	(3) to	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control lever	mm	mm rev/min		Ì		deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca.22	250	6,6	-	-
	x =						250	7,0-7,2		
ca.66	11,7 4,0 1430	1240-1250 1310-1340 0,3-1,4					490-55	0 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	III-load stop	6 Rotational- speed limitat		iel delivery aracteristics	Starting f	uel delivery 5	48) Idle stop		
Test oil te rev/min 1	emp 49°C (104°F) cm1/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7	rev/min B	Control rod travel mm	
LDA 1200	0,7 bar 154,0-157,0 (151,5-159,5)	1240-1250*	LDA 700	0,7 bar 150,0-154,0 (147,0-157,0)	100	190,0-220	,0 -	-	
			LDA 700	0 bar 102,0-105,0 (99,5-107,5)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

40.0

## D. Adjustment Test for Manifold Pressure Compensator STE 9,7 c

Testatn =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 3102 + RSVP 1 A 516	0,7	0 0,47 0,30	12,7-12,8 10,2-10,3 12,1-12,2 10,6-10,8

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

- 2 -

40

WPP 001/4 PEN 10,0 f

2. Edition

PE 6 P 110 A 320 RS 3132 Komb.-Nr. 0 401 876 738

RSV 200-1100 P 1/421-1

supersedes 7.85

company Volvo-Penta engine TID 100 K 225 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

3,5-3,6 3,45-3,65)

mm (from BDC) RW = 9,0-12,0 mm

	(0,	43-3,037		•	•	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm1100 strokes	mm
1	2	3	4	2	3	6
700	13,0+0,1	17,6-17,8	0,4 (0,75)			2,5 <sup>±</sup> 0,1
200	4,2-4,4	1,7-2,1	0,3 (0,6)		•	(2,2-2,9)
!						

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	er rated speed		intermo	ediate rate	d speed	4	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-		ca. 20	250	3,8	-	-
	x =	4,0					250	4,2-4,4		
ca. 57 <b>(2a)</b>	11,6 4,0 1340	1140-1150 1175-1205 0,3-1,7					245-305	= 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp 40°C (104°F)	6 Rotational speed limitat		uel delivery naracteristics	Starting l	luel delivery 5	4a Idle stop	
1	cm /1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes *	rev/min	cm <sup>-</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
700	176,0-178,0 (173,0-181,0)	1140-1150*	-	•	- 200	- 17,0-21,0 (14,5-23,5	-	•

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH. Kundendienst. Klz-Ausrustung. • 1980 by Robert Bosch GmbH. Postfach 50: D-7000 Stuttgart t. Printed in the Federal Republic of Germany Imprime en Republique Federale d. Alfomagne psr Robert Bosch GmbH. 10.85

Testoil-ISO 4113

WPP 001/4 MB 18.3 c 1

1. Edition

PE 10 P 110 A 320 LS 3818-10

RO 300/1150 PA 437-4

supersedes

Komb.-Nr. 0 401 849 720

company:Daimler-Benz engine: OM 423

1- 9- 7- 6- 3 - 5 - 2 - 10- 9 - 4 0-27-72-99-144-171-216-243-288-315°  $\stackrel{+}{-}$  0,5° ( $\stackrel{+}{-}$  0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Porticiosing at prestroke

4,0 - 4,1 (3,95-4,15)

mm (from BDC)

Cv1. 10

		13,33-4,13/				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (forque-control valve) mm 6
1150	11,0+0,1	12,1-12,3	0,4(0,8)			
300	7,9-8,1	1,2-2,0	0,4(0,7)			
600 900	_ Se	ct. C, Col. 4-5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel	Full-load s Setting po rev/min 3		-	rev/min	Idle spec Setting p rev/min 7	coint Control rad travel		cifications (5) Control rod travel mm	Torque ( rev/min 11	Control rod
600	13,0-14,0	600	13,5	10,0 4,0 1350	1190-1205 1225-1255 0-1,5		8,0	100 300 430-	min.9,5 7,9-8,1 470 = 2,0		11,0-11,1 11,5-11,7 11,4-11,6

Torgue-control travel on flyweight assembly dimension a = 0,45<sub>mm</sub>

Speed regulation: At 1190-1205 min-1

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	<b>3</b> a	Fuel deliv	ery characteristics	Tions speed		
rev/min 1	cm³/-1000 strokes 2	rev/min 3		rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 6	Control red travel cm <sup>3</sup> /1000 strokes / mm	
1150	121,0-123,0 (118,5-125,5)			900	107,0-111,0 (104,0-114,0) 115,0-120,0 (112,0-123,0)	100	140,0-160,0 (136,0-164,0)	

Checking values in brackets

10.85

estoriose.

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 18,3 d 3

1. Edition

PE 10 P 110 A 320 LS 3818-11 RQV 300-1150 PA 486-2

Komb.-Nr. 0 401 849 706

1-8-7-6-3-5-2-10-9-4

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes\_

company: Daimler-Benz

engine: OM 423

261 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	stroke	(3.95-4.15)	mm (from BDC)	C	y1. 10 RW = 9	,0 - 12,0 mm
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,2+0,1	12,6-12,8	0,4(0,8)			
300 600 900	8,5-8,7 - -	1,4-2,2 C, Sp. 4+5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [

### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding e	leeve travel
Degree of deflection of control lever		11 WASS	(a) (a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel	rev/min	0
max.	1190	15,2-17	,8	-	-	-		100 300	min.10,2 8,5-8,7		1,6-1,8 5,8-6,2
ca. 52	11,2 4,0 1400	1190-12 1235-12 0-1,	<b>65</b> ]					430-4			8,2-8,4
							<b>3</b> 9				

Torque control travel a = 0,5

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-rol Test oil ten rev/min		Rotational-speed 2b limitation intermediate speed rev/min 3	rev/min cm³/1000 strokes		idle switchi	<u> </u>	Torque- travel rev/min 8	Control cod travel mm	
1150	126,0-128,0 (123,5-130,5		600 900	110,0-114,0 (107,0-117,0 118,0-123,0 (115,0-126,0	100	140,0-160,0 (136,0-164,0	1150	12,2+0, 12,5+0,	

Checking values in brackets

\* 1 mm less control red travel than col. 2

WPP 001/4 MB 18,3 e 3

PE 10 P 120 A 320 LS 3824-10 RQV 300-1150 PA 724-2 1-8-7-6-3-5-2-10-9-4 0-27-72-99-144-171-216-243-288-315°+0,5° (+0,75°)

supersedes -

1. Edition

company: Daimler-Benz engina: OM 423 LA 368 kW

Values only apply to test nozzle-and-holder assembly Komb.-Nr. 0 401 849 719 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

4,0-4,1 Port closing at prestroke mm (from BDC) Cyl. 10 3,95-4,15 Rotational speed Control rod Fuel delivery Difference Control rod Spring pre-tensioning (torque-control valve) **Fuel delivery** cm³/ rev/min mm cm3/100 strokes 100 strokes mm cm<sup>3</sup>/100 atrokes mm 1150 18,0 - 18,20,5 (0,8) 11,7+0, 1.6 - 2.2 300 5.0-5.2 0.8(1.2)C, Sp. 4 u. 5 0,8 (1,2) 750 500

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated s	paed		intern	rediate rated	speed		Lower	rated	speed			Stiding	leeve trav	vel	
Degree of deflection of control	rev/min Control	(1846)	Degre deflec	tion	Con trav	trol rod el	Degree	lion		Control r travel	od	Gilding s		①	
lever	rod travel mm 2	rev/min (	of con lever	rev/m		4	of cont lever	troi	rev/min	mm	3		İ		
	-			5	16				8	9		10	11		
max.	1150	15,2-17	,8 -	-		ed <b>a</b>	ca.	20	100	min.	6,3	300	1,0-1	,2	
ca. 54	10,7	1190-12	00						300	4,8-	5,0	500	4,0-4	,5	
	4,0	1245-12	75		1		1					700	5,3-5	,8	
i L	1300	0 - 1	,5				300-	400				1100	7,4-7	,8	
				1								1260	10,0		
<u> </u>							(39)								

Torque controi travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

1	d stop np. 40°C (104°F) 2	limitation intermediate speed	high idie s	ا ھ	idle switchir	ng point	travei	Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1090 strokes		cm <sup>3</sup> /1000 strokes	rev/min	mm
<u> </u>	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 180,0-182,0 (177,0-185,0)	1190-1200 *	LDA 750 LDA 500	0,7 bar 184,0-188,0 (181,0-191,0 0 bar 138,0-140,0 (135,0-143,0		150,0-170,0 (146,0-174,0		-

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.85

BOSCH

## D. Adjustment Test for Manifold Pressure Compensator MB 18,3 e 1

- 2 -

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	ਜ਼ਿੰਦasurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE10PLS3824-10 + RQVPA 724	0,70	0 0,39 0,52	11,7 - 11,8 10,0 - 10,2 10,4 - 10,6 11,2 - 11,3

Notes

(1) when n -

rev/min and gauge pressure = bar ( - maximum full-load control rod travel)

Testor-ISO

WPP 001/4 MAN 20,9 t

1. Edition

En

PE 12 P 120 A 520/4 LS 3828 RQV 250-1150 PA 668-7 supersedes - 1-5-9-8-3-4-11-10-2-6-7-12 company: MAN 0-15-60-75-120-135-180-195-240-255-300-315°  $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$ 0,75°) engine: D 2842 LE Values only apply to test nozzle-and-holder assembly 560 kW 1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 401 840 725

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	troke	(4,15-4,35)	mm (from BDC)	Cy1.	12				
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (forque-control valve) mm			
1150	11,0+0,1	20,0-20,2	0,5(0,9)						
250	6,9-7,1	1,7-2,3	0,8(1,2)						
	·								

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding e	leeve travel
Degree of deflection of control lever	rod travel	Control rod travel mm rev/min (2a)	Degree of deflection of control lever	rev/min	Control red travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	0
1	2	3	4	5	6	7	8		10	mm 11
max.	1150	15,2-17,8	-	-	_	ca. 12	100	min.8,5	350	2,0-2,5
ca. 66	10,9 4,0 1450	1190-1200 1320-1350 0-1,0					250 400-	6,9-7,1 460=2,0	900 1150	6,7-6,9 8,6
•			<u>.</u>			<b>3a</b>				

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter	d stop	Rotational-speed 20 limitation intermediate speed	Fuet defix high idle s		Starting Idle switchin		Torque- travel	Control rod	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	
1150	200,0-202,0 (197,0-205,0		ı	•	100	190,0-210,0 (186,0-214,0		-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.85

BOSCH

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 d 2 1. Edition

n \_ 1.

estoil-ISO 4113

PE 8 P 120 A 920/4 LS 7008 X RQV 200-950 PA 547-6 Komb.-Nr. 0 402 648 815 1-2-7-3-4-5-6-8 je 45° + 0,5° (+ 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes -

company: Saab-Scania USC 14 02

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	troke .	4,5-4, <del>0</del> (4,45-4,65)	mm (from BDC)	; RW = (	5,0 - 12,0 mm	
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes 4	mm 2	cm <sup>9</sup> /100 strokes 3	mm 6
700	13,1+0,1	18,7 - 18,9	0,7 (1,0)			3,3 <sup>+</sup> 0,1 (3,0-3,5)
225	4,5-4,7	1,4 - 1,8	0,3 (0,6)			(3,00)
					:	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper rated s	peed	1	Intermediate	rated sp	eed	Lower rated	speed	•	Sliding s	leeve trave!
	rev/min Control	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control	rod travel	mm rev/min (2)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	990	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	200	1,0-1,2
ca. бО	12,1 4,0 1250	990-1000 1110-1140 0 - 1,0	l					1 <sub>4,4-4,6</sub> 370 =2,0		3,3-3,8 5,0-5,2 7,9
						39				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full load d Corpol-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed			Starting fuel delivery idle switching point		Torque- travel	control (5) Control rod
rev/min 1	cm³/1000 strokes	rev/min 48 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
LDA 7UU	0,9 bar 187,0-189,0 (184,0-192,0	990-1000 ×	LDA 950 LDA 500	0,9 bar 181,0-189,0 (179,0-191,0) 0 bar 156,0-160,0 (154,0-162,0)	225	250,0-300,0 =20,0-21,0 mm RW 4,4-4,6 mm RW	1	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.86

Bosch

SCA 14,2 d 2

- 2 -

Testatn -

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE8PLS 7008 X +RQVPA 547-6	0,90	0 0,24	13,1 - 13,2 11,4 - 11,6 12,1 - 12,3

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 3.5.1985
- Start of fuel delivery-engine: 22° v. OT
- Firing sequence, engine : 1-5-4-2-6-3-7-8
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 nm.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,0 g

1. Edition

PE 8 P 120 A 920/4 LS 7108 RQV 200-950 PA 736 Komb.-Nr. 0 402 648 813 1-2-7-3-4-5-6-8 je 45°  $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$  0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

supersedes - company: Scania

DSC 14 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel injection Pump Settings

Port closing at pres	troke	(4,45-4,65)	mm (from BDC)	: RW = 6	.0-8.0 mm	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
700	14,2+0,1	20,1-20,3	0,7 (1,0)			3,3 <sup>±</sup> 0,1
225	4,6-4,8	1,4-1,8	0,3 (0,6)			(3,0 - 3,5)
	-	ence between co k.1.65-2.35° c	1			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
deflection	rev/min Control rod travel mm 2	travél	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of contro! lever 7	rev/min mm	rod 3		1
	990 13,2 4,0 1250	15,2-17,8 990-1000 1115-1145 0-1,0		<b>-</b>	-	ca. 10	100 min. 225 4,4- 310-370=2	4,6	420	0,6-0,8 3,1-3,3 4,8-5,0 7,4
						<b>3</b> a			<i>f.</i>	

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten	T 11 T	limitation intermediate speed	Fuel delic high idle s	very characteristics (5a)	Starting fuel delivery 6 die switching point		Torque- travel	Control rod
rev/min	cm³/1000 strokes .	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 atrokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 201,0-203,0 (198,0-206,0)	990-1000*	LDA 950 LDA 500	0,9 bar 194,0-202,0 (192,0-204,0 0 bar 156,0-160,0 (154,0-162,0		250,0-300,0 =20,0-21,0 nm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than cot. 2

. 2 -

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 8 PLS 7108 + RQVPA 736	0,90	0 0,35 0,24	14,2-14,3 11,5-11,6 13,6-13,7 12,0-12,2

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 3.5.1985
- Start of fuel delivery-engine: 22° v. OT
- Firing sequence, engine
- : 1-5-4-2-6-3-7-8

die

\*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 - 3,1 mm.

2

Festoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps (2)PP 001/4 MB 12,0 a and Governors

1. Edition

PES 6 P 120 A 720 LS 7114 RQ 300/950 PA 774 Komb.-Nr. 0 402 746 806

supersedes company:

engine

Daimler-Benz

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 OM 447 LA 350,0 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)Cy1.6; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve)
600 300	13,9+0,1 6,1-6,3		0,5(0,9) 0,8(1,2)			

Adjust the fue! delivery from each outlet according to the values in

### **B. Governor Settings**

Checkin PRG che	g of slider ck (1)	Full-load s	•	•	cifications (4)	Idle spec	_		cifications (5)	Torque d	control (3
rev/min 1	Control rod travel mm 2	rev/min	Control red travel mm	Central red travel mm 5	rev/min	rev/min 7	Control rod travel rvnrn 8	rev/min 9	Control rod travel	rev/min 11	Control rod Control Control
650	19,2-20,8	650	20,0	13,1	995-1010	300	6,2	100	min. 7,8	950	14,1-14,3
VH =	max. 46°			4,0 1150	1065-1095 0-1,5		-		6,1-6,3 20 <i>=</i> 2,0	850	14,7-14,9
Torques	onicol travel						į	945-9	960 min-1		1 mm less contro

on flyweight assembly dimension a =

Speed regulation: At

rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop 3a	Fuel delivery characteristics			Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /~1900 strokes	rev/min 3	rev/min 4	cm³/~1000 strokes		rev/min 6	Control red travel cm <sup>3</sup> /1000 strokes:/ mm 7	
LDA 600	0,85 bar 227,0-229,0 (224,0-232,0)	-	LDA 700	1,5 bar 243,0-247,0 240,0-250,0)		100	230,0-250,0 226,0-254,0)	
LDA 950	1,5 bar 232,0-235,0 (229,0-238,0)		LDA 500	0 bar 135,0-137,0 132,0-140,0)				

Checking values in brackets

1.86

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES 6 PLS 7114 + RQPA 774	0,85	0,25 0,50 0,98 1,10	13,9-14,1 10,6-10,8 12,7-12,9 13,6-13,8 13,2-13,4

**Notes** 

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 STE 9,7 d

1. Edition

PE 6 P 120 A 720 RS 7118 Komb.-Nr. 0 402 646 830

RO 300/1100 PA 784

supersedes.

company: Steyr

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine: WD 615,68 222 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(4.95-5.15)

mm (from BDC)

RW = 9.0 - 12.0 mm

		7,55-5,15,				
Rotational speed / rev/min t	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,7+0,1	18,1-18,3	0,5(0,9)			3,3 ± 0,1
300	4,5-4,7	1,5-2,1	0,8(1,2)			(3,0 - 3,5) **
** Due to s with a n	noothing ew delive	of the sealing ry-valve holder	edge, the must be	initial adjusted	spring tension to 2,9-3,1 mm	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod	Full-load s Setting po rev/min 3			cifications (4) rev/min	Idle spec Setting p rev/min 7	Control red travel		cifications (5) Control rod travel mm	Torque of rev/min	Control rod
600 VH =	15,6-16,4 ca. 46°	600	16,0	11,7 4,0 1300	1145-1160 1205-1235 0-1,0		4,6	100 300 360-	min.6,0 4,5-4,7 400 = 2,0	-	-

Torque-control travel 0,30 on flyweight assembly dimension a = C. Settings for Fuel injection Pump with Fitted Governor

1145-1160 min-1 Speed regulation: At

1 mm less control rod travel

	elivery on control lever np. 40°C (104°F)	Control red stop 3a	Fuel deliv	ery charecteristics	Starting fuel delivery Idle speed		
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min	cm³/~1000 strokes	rev/min 6	Contret red travel cm <sup>3</sup> /1000 strokes:/mm 7	
LDA 1100	1,2 bar 181,0-183,0 (178,0-186,0)	<b>-</b>	LDA 700 LDA 700	1,2 bar 190,0-196,0 (187,0-199,0) 0 bar 143,0-145,0 (140,0-148,0)	100	225,0-265,0	

Checking values in brackets

1.86

STE 9,7 d

- 2 -

Testatn =

500 rev/m

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) ,
PE 6 PRS 7118 + RQPA 784	1,20	0 0,57 0,36	12,7-12,8 10,3-10,4 12,1-12,2 10,8-11,0

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

20

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 11,7 c

1. Edition

PES 6 P 120 A 720 LS 7120 RSV 350-1100 POA 518

Komb.-Nr. 0 402 776 800

Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes Daimler-Benz OM 427 A 206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

5,2-5,3 (5,15-5,35)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm1/100 strokes 3	Difference cm <sup>-1</sup> 100 strokes 4	Control rod travel mm 2	Fuel delivery cm*/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	13,2+0,1	19,6-19,8	0,5 (0,9)			
350	5,5-5,7	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	er rated speed	rev/min	Interme	diate rated	speed	4	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-		-	ca. 25	350	5,6		
	X = 3	,5					350	5,5-5,7		
<b>3</b> .52	12,2 4,0 1350	1130-1140 1200-1230 0 - 1.7						**		:

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel,

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Fu	III-load stop	6 Rotational- speed limitat	(3a) Fr	uel delivery paracteristics	Starting t	uel delivery 5	(4a) Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>1/1</sup> 1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1/</sup> 1000 strokes 5	rev/min	cm <sup>4</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1080	0,75 bar 196,0-198,0 (193,0-201,0)	1130-1140 *	LDA 750 LDA 500	0,75 bar 199,0-203,0 (196,0-206,0) 0 bar 143,0-145,0 (140,0-148,0)	100	170,0-190 (166,0-194		-	

Checking values in brackets

\* 1 mm less control rod travel than cot 2

**BOSCH** 

Test at n =

500

rev/ nin decreasing pressure - in bar gauge pressure

ИВ 11,7 c

- 2 -

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 5 PLS 7120 +RSV POA 518	0	0,10 0,20	11,2-11,4 11,8-12,0 12,6-12,8

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

Testoil-180

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 14,7 a 1

1. Edition

PE 8 P 120 A 320 LS 7801

RQ 300/1050 PA 717

supersedes

Komb.-Nr. 0 402 648 812 1-8-7-2-6-3-5-4 je 45 ° ± 0,5 ° (± 0,75 °) company:

Daimler-Benz OM 442 LA

engine:

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 320 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(5, 15-5, 35)

mm (from BDC) Cy1.8; RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	- 4	2	3	[6
600	14,8+0,2	21,3-21,6	0,5(0,9)			_
300 1050	6,2-6,6	1,6-2,2	0,6(1,0)			
850 500	-	C, Sp. 4 u. 5	0,8(1,2)	n		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checking PRG che	g of slider ck Control rod		Full-load s Setting po		-	cifications 4	Idle sper Setting p	ooint Control		cifications 5	Torque o	Control rod
rev/min 1	travel mm 2		rev/min = 3	rod travel mm 4	rod travel rrim 5	rev/min 6	rev/min 7	rod travel rnm 8	rev/min 9	travel mm 10	rev/min 11	travel mm 12
600	19,2-20	,8	600	20,0		1095-1110 1160-1190	300			min. 7,9 6,2-6,4		15,5-15,7
VH	= max. 4	6 9			1300	0 - 1,5				20 = 2,0		
									ļ			
Torque-c	ontrol travel		1	0,90	<u> </u>	L	L	1	095-1	110 min <sup>-1</sup>	L	1 mm less control

Speed regulation: At

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control fever mp. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics (3b)	.0.0 0,000		
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm³/~1000 strokes	rev/min	Control rod travel cm <sup>3</sup> /1090 strokes/ mm 7	
LDA 600	0,68 bar 213,0-216,0 (210,0-219,0)	•	LDA 850	1,15 bar 244,0-248,0 (241,0-251,0)	100	200,0-220,0 (196,0-224,0)	
LDA 1050	1,15 bar 232,0-234,0 (229,0-237,0)		LDA 500	0 bar 145,0-147,0 (142,0-150,0)			

Checking values in brackets

Torque-control travel

on flyweight assembly dimension a =

1.86

BOSCH

Testatn =

600

rev/min decreasing pressure - in bar gauge pressure

Pump/governör	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE8PLS 7801 +RQ PA 717	0,68	0,31 0,47 0,82 0,95 1,10	14,8-15,0 12,2-12,4 13,8-14,0 15,1-15,2 15,5-15,7 16,0-16,1

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)